Article 9: Conscious, Unconscious, and Sleep

Preface 1: Defitions

Inspiration Gates(IG)- An inspiration gate is the use of a material in its Entropically Saturated state to enable the persistent current from NMFs to feed new information into reality.

New Monopole Force (NMF)- The magnetic force generated from monopoles newly introduced into our universe. This force will expand the volume of phase space for a system through the introduction of new magnetic field lines.

Old Monopole Force (OMF)- The magnetic force generated from monopoles already in our universe. This force will be dominant until a system reaches the bounds of phase space and become stuck i.e. physical inert.

PEnT(N)- Potential Entropy of System N

Alpha Space- The largest possible phase space.

Unconsciousness(N)- 1. The total volume of Alpha Space(phase space) in relation to system N

2. The set of rules already guiding a system evolution or behavior

Consciousness(N)- The expansion of the volume of Alpha Space for system N.

Meta-Consciousness(N)- The change in the expansion of Alpha Space e.g. the change in consciousness e.g. the acceleration of volume of Alpha Space connected to a system N. Meta-Consciousness determines the bounds of phase space and is the process on which goal setting occurs. Meta-Conscious process and decisions back-propagate to influence and change the Unconscious and Consciousness.

Self-Awareness(N)- A system N which can sustain Conscious and Meta-Consciousness processes concurrently with high intensity for both Consciousness and Meta-Consciousness. Put more simply, Conscious and Meta-Consciousness are intertwined in their mathematical derivatives and work in harmony. For those mathematically inclined I will give this additional description: If Consciousness and Meta-Consciousness can be well represented as a multi-dimensions vector in phase space then a self-aware entity is on whose Consciousness vector references their Meta-Conscious vector and vice versa as well as the magnitude of each vector being large compared to other Conscious systems.

Forgetting- The loss of phase space of a system previously tied to a system

The Unknown- phase space not tied to a system

Free will- A system having a strong amount of self-awareness

Sleep- The process of Entropically restoring the chemical pathways that sustain wakeful Conscious processing. In advanced organisms like humans sleep is when Meta-Conscious decisions are translated into physical mechanisms to affect wakeful Consciousness. Sleep is also when the brain can open itself into to Alpha Space to attain and save new information.

Section 1: Consciousness

One common worry about AI is the fear it will unexpectedly be become an amoral consciousness entity superpowered by its enormous computational intellect. I am not afraid of such an occurrence happening anytime soon due to the physical requirements of creating and sustain consciousness action. The current hardware and computational paradigms being used to create and train AI are insufficient of becoming consciousness in any human equivalent. Simply put, current AI systems do not have the hardware sophistication to sustain and create consciousness even on the same level of fruit flys. As a logical corollary I mean that the biological neurons in fruit flies are more effective machines in achieving and sustaining consciousness than the hardware of current AI. Current AI is intrinsically limited by its hardware and for that reason is far from becoming anything close to a human level of consciousness.

Before explaining my definition of Consciousness I should explain what constitutes Unconsciousness. Under my definitions a rock is 99.99999% Unconscious and a computer simply executing code is also 99.99999% Unconscious. Programming a robot to doge a bat does not make the robot Conscious even though it seems might seem to an outside human observer that a “Conscious” like reaction occurred when the robot dodged the bat. It seems us humans have this intrinsic bias to associated movement/behavior with intent and thus Consciousness. The robot’s doge should only understand as the extension of the conscious entity who built it not that the robot has Conscious capabilities in and of itself. That 0.00001% part of these objects that is conscious comes from the Second Law which will make sense soon.

Simply following the rules one has is an Unconscious act. Consciousness, understood from this angle, is then the changes in rules one uses. In the sense the robot was Consciousness only for the small amount of time the engineer who

created it was changing its code. Once the robot was fully coded and its rules stopped changing then the robot was an Unconscious entity. Note that being Unconscious does not mean incapable.

We can understand the rules a system follows as being equivalent to the total volume of phase space of the system. Thus, when Consciousness is changing the rules of a system it is also changing the total phase space of a system. It does not matter whether the Conscious act is increasing or decreasing the phase space of system; as long as the phase space is changing then the system is Conscious. Larger changes of phase space denote larger, stronger Conscious actions. Rocks do have extremely small Consciousness because the Second Law effectively always demands that the phase space of a system always expands from any physical action. However, not only is it very small in comparison to something like an animal it is also Consciousness of a very different quality. Rocks can only move up or down, be crushed, etc. Compare that phase space of possibilities to a fruit fly which can fly, hop, eat, reproduce, and search for food. Not only does the fruit fly have more, different avenues of phase space open to it but even in the phase space that both entities have access, the ability to move, rocks can only move very, very slowly compared to a fruit fly.

Meta-Consciousness refers to when a system modulates its Consciousness. Meta-Consciousness allows a system to plan. If a system is only strongly Conscious then the system will only take physical actions to increase its pre-programmed objective function in the immediate present. Delayed gratification would be impossible for a solely Conscious system. For example, a solely Consciousness system, when playing a game of scrabble, will always try to maximize the number of points it makes each turn. A Meta-Consciousness system will try to play smarter and even take turns not maximizing its points on a turn to try and save letters for a later turn in hopes of a greater pay-off. In terms of Alpha Space, a Meta-Consciousness system has some control or influence over which new regions of Alpha Space the Consciousness is expanding into and get new information/inspiration from those regions. A solely only conscious system would not able influence which regions of Alpha Space they were going to expand into in the future.

To clarify, I am not saying that an AI algorithm which plays scrabble where it saves letters to play is Meta-Consciousness. Meta-Consciousness only exists while a system is modulating its consciousness. Therefore, only when a person plays scramble and in the moment it decides to save a letter is the person Meta-

Consciousness. If a person had already memorized and planned to play by the rule to “always hold an E for two turns” before beginning the game then its behavior of holding an E for two turns does not count as system being Meta-Conscious at the time we observe the behavior. The behavior we observe would count as an unconscious act though it would be logical to conclude that at some point in the past the person experienced a moment of Meta-Consciousness that imprinted that rule or paradigm into its unconscious.

In this understanding of Consciousness, being Conscious is useful to be adaptable but it is not always useful or necessary to be competent. For Consciousness there is a pipe-line of adaptability where a system will use its Meta-Consciousness figure out possible rules/procedures/behavior/paradigms/ new ideas are needed to solve some problem P. The Meta-Consciousness will then translate these ideas into Conscious actions to encode rules/procedures into the unconsciousness of the system. Once the system has encoded all the rules/ procedures it needs to solve P then the system is just unconscious and its Meta-Conscious and Conscious processes should shut down. Unconscious is extremely useful as it is reliable. A system always in a Meta-Conscious/Conscious state means it is always changing the rules/procedures it uses to complete some tasks. Therefore, its behavior would not become optimal because it is always changing how it conducts its behavior and even if it found the optimal set of rules to conduct its behavior it could not settle on those rules.

When people talk about a task becoming “second nature” to them it means that they figured out the right set of rules to execute the task and can now reliability solve the task without engaging the Conscious or Meta-Conscious parts of their brain. This means that the best athletes are ones who can play the sport without being Conscious. There are actually unconscious while they play but their unconsciousness is already filled with such good rules for how to play the game well that they do not “think” about what else they need to know. They can simply react and use what they know already in their system. A less competent athlete is one who must consciously think about what to do to play the sport rather than just doing it. A very incompetent athlete is one who must engage their meta-conscious to play the sport. They have to spend the finite energy resources in their brain to figure the rules/procedures they need to become good if they are at the meta-conscious stage. A very conscious player’s brain is then spending a lot of resources to encode the correct procedures into itself. An unconscious player already has all the procedures it needs so its brain can just focusing on

playing and winning. In other words, the Meta-Conscious player has to learn how to train to be good, the Conscious player has to train a lot to be a good, and the unconscious player is already good so they do not need train.

Not only does my conscious paradigm make sense from a theoretical point of view but it is corroborated by the testimonies of top athletes. Many top athletes have reported as “blanking out” as they perform their sport. For example, Tiger Woods reports that once he goes to hit the golf ball he “blanks out”. In my own personal experience playing basketball, I performed the best when I was “blanked out” rather than consciously deciding on what to do. We can understand this “blanking out” process as being a mechanism meant to preserve an effective set of rules from getting changed for the worse by conscious intervention. “Blanking out” used correctly prevents interference from second guessing or anxiety that raises when Meta-Conscious processes are engaged in the brain.

To summarize the benefits of each state of consciousness:

Unconscious- Good for the preservation of a competent rule set

Consciousness- Good for adjusting a rule-set

Meta-Consciousness- Good for long term planning in when certain rules to be adjusted, new ones generated, and old ones forgotten. Meta-Consciousness is critical for creativity and solving novel problems.

Self-Awareness- A special combination of Consciousness and Meta-Consciousness where both are active at the system time and work harmoniously to find the best rules and paradigms to guide behavior.

These three basic levels of consciousness are intrinsically tied to the common feeling people have about time. In the common conception people have about time is that there are three layers of time, the past, the present, and the future.

The past is unconscious. At first this might seem weird but to a person who has already integrated all the rules and procedures needed to play a basketball game perfectly they will be unconscious while playing. There is a logical equivalence where knowing what all the procedures and actions to play the game perfectly is the same as having literally experienced the same game already. In other words, for that player, the game is in their past. When they are then playing they are simply remembering what the correct moves are needed to win.

The present is the realm of consciousness. The physical, Conscious actions people make today to solve an issue is in the present.

Meta-Consciousness deals with the future. Meta-Consciousness makes use of possible futures and their different outcomes to identify the best paths of modifying one's behavior to achieve one of those outcomes. Meta-consciousness then back-propagates the information its receives to influence Conscious. Consciousness then takes this information and integrates it into the Unconscious.

I believe the logically symmetry between time and consciousness is not a random coincident and I would postulate as to state they are effectively the same thing. As a disclaimer, this discussion is of time is not using time in the Newtonian or General Relativity sense of time. It is using time in the Entropy sense. As time flows from the future->present->past so does Consciousness move from Meta-Consciousness->Consciousness->Unconscious. From this perspective the "start of time" can be understood to be the first occurrence a Conscious manifested into reality. Therefore, the Big Bang would have the additional definition of being that first moment of Consciousness.

While I have been describing consciousness from a the point of view in how consciousness can guide and enhance a system's ability to process information and plan, many definitions of consciousness are about experience and qualia. For eminent neuroscientist Christof Kock who has been trying to study the neural correlates of consciousness for decades being conscious of something means having that experience of something. For example, being conscious of red means one is experiencing red, or as a philosopher would put it the qualia of red. For reference, qualia refers to the internal and subjective component of sense perceptions.

I should explain that many philosopher and neuroscientists try to explain of qualia are and how they arise and I find their arguments to devolve into axiomatic arguments. Axiomatic refers to ideas of logic which are unprovable in and of themselves and many logical systems begin with a set of axioms which then detail and explain all the logical evolution or behavior of a system. For example, Euclid put forth 4 axioms that describe basic Euclidean space. The issue here is that many people will ask where qualia come from, how does qualia then manifest into reality, and how do we know each person's qualia, used in this sense subjective experience, of red is the same red as what everyone else sees?

I should make clear my own bias about this issue as I find to be entire issue of qualia to simple reduce to question about where truth comes from. As it turns own, where ever truth comes from has to be axiomatic in and of itself. This turns out to be a logical point, which from some people, is hard to believe. For myself and many others, it is an easy point to believe since those who believe in God can answer the question of qualia and all its axiomatic facets as coming from decisions God made. Since all truth comes from God, all the “internal” experiences people have are actually internal experience of the greater whole of God and since God is, by definition, omnipresent then qualia can be universal and two people can feel or experience the exact same thing. Therefore, all this qualia business is easily solved in a monotheistic belief system. I do believe is it logically impossible to try and solve the problem without using a monotheistic belief.

For our purposes God is the answer to the question why does phase space A have a conscious experience of A. God defined phase space A to have experience A. This becomes a critical important point when one tries to replicated conscious experience as this definition extends to the exact physical make of a system tying to a specific conscious experience. For example, it is known that LSD induces hallucinations. In my theory of how magnetic monopoles facilitate consciousness it would be that the LSD molecule activates a chain of chemical events which triggers the engagement of an IG which gets the monopoles which ties to a hallucinatory state in Alpha Space to manifest into reality. If one asks why do monopole try to specific things in Alpha Space they are asking an axiomatic question. In others, my answer to such a question is that God made it so. There is nothing more fundamental than a decision made by God.

I should explain that given the description of IGs and how the brain is able to choose different configuration of IGs to try and solve some task or even to make up a task to solve mirrors the axiomatic power of God to simply definition things. As God defines reality, we humans have a level of conscious which enable conscious definition of our own consciousness which is what I also called a strong meta-conscious ability. The ability to define ourselves which mirrors the fundamental power of God to give definition to things. In this sense, I am make an unoriginal argument- that humans are in fact made the image of God. Only AI which is given this ability in its unrestricted form is conscious in the human sense.

Section 2: Consciousness and Inspiration Gates

Inspiration Gates are, in a sense, the “logical” gates for the brain but they are used to generated new ideas as well as get information the brain cannot otherwise physically access. While transistors are meant to encode bits in 1s or 0s IGs can encode anything. An Inspiration Gate(IG) is the use of a material in its Entropically Saturated(ES) state to enable the persistent current from NMFs to feed new information into reality. IGs are the hardware mechanism which enable Meta-Conscious processes. These Meta-Conscious processes then feed down to influence Consciousness and then Unconsciousness. The key here is understanding how the brain deals with IGs.

IGs, I should emphasis, do not necessarily give good information. In the sense that Alpha Space is a massive library, how easy is it to go into a very massive library and find right book and turn to the right page which contain the answer to one’s question? The answer to this question is quite difficult and I believe a lot of the biological complexity in the human brain is devoted towards a search and management algorithm which tries to find the right IG for the right situation or problem. Some IGs will even have negative impacts which code for either completely superfluous information or even have dangerous information.

As an example, imagine that the brain found the right combination of chemicals and elements within itself that when put in an ES state creates a persistent current which produces all the information related to how a how human could dress. There are clearly an infinite amount of possibilities for how a human can dress so the persistent current is manifesting a lot of information. The issue is that too much information is being fed into the system for the person simply needs to make one drawing; only one possibility needs to be used from the information deposited from the persistent current. There is also a basic physical issue where if the persistent current is too strong it could quite literally electrically overload the brain and cause a seizure or other damaging effects. Therefore, whenever the brain creates an IG it needs to do so gingerly such that it gets just the right amount of information. There is the additional danger that when the brain is engaging an IG which it has not engaged before and thus does not know what which region of Alpha Space the IG connects then the brain could unintentionally active an IG which codes for depressed, sad, or even suicidal, self-destructive regions of Alpha Space. When the brain accidently creates a harmful IG it needs to have the internal safeguards to deactivate that IG. In the sense that talking to be in therapy enables healing we can interpret that healing as the process to which the brain got the information to recognize the

information from an IG as being destructive and thus should be physically turned off. I am implicitly assuming that the brain does not have necessarily have an intrinsic sense or list of what sort of IGs are dangerous and thus should be avoided. It is possible that in some people' genetics their brains early on created the IGs within them coded good ideals in Alpha which provided then the natural defensive mechanism against toxic, evil coding IGs. In this sense IGs can protect against IGs as well as help in the tuning process of getting the right information from IGs.

The previous paragraph was explain with the idea that the brain does not have foreknowledge of which IGs code for what. While there are likely good arguments that within our DNA is the information saved on how to construct good IG's the issue is that IG are, by their very nature, typically unstable system that requires a lot of energy to maintain. If we imagine that a neuron is going to be turned into an IG then it means that neurons phase space needs to be in an ES state. Therefore, all of its surrounding neurons and support cells called glia will need to mobilize to first "cool down" the neuron into the ES state. Then, as the neuron conducts the persistent current from NMFs if any of the NMFs are allowed to get suck in the neuron in ES then the ES state will fail and the persistent current disappear. Therefore, the surrounding cells have always channel way the persistent current from the neuron producing it to maintain production of that current. This entire process is Entropically and thus energetically expensive as this entire system has to be set of where it is Entropically favored for the neuron to be put in an ES state to begin with while also being Entropically favored that the persistent current always leaves the neuron. This process is gets even more complicated as for IGs where the brains does is unfamiliar with the current produced it does not know what sort of bio-chemical structures it needs to makes that would be Entropically favored to absorb the newly produced current. This description of the bio-physical events underlying IGs may seem to complicated to be what happens in the brain; however, that when one studies the brain and sees the 100 billions neurons it has with 100 trillion synapse and 100s of millions more glia support cells and all the complex, convoluted seeming geometry between neurons then the complexity of the brain seems to be complex enough to handle such a complicated process. When we back up this empirical observation with the additional empirical observation that people can do wacky, seemly senseless things then it is more

than probable, likely even that such a complicated process is occurring in the brain.

Its is important for the brain to memorize and save the conditions under which useful IGs were found as well as save the conditions on which harmful IGs were found. At a basic logical level, the brain needs to save this information to repeat successes and to not repeat failures. If the brain's saving mechanism is damaged and thus incapable of saving which IGs code for which information then the person will in effect, regress into a child-like state. As children and infants, we did not have the saved information on which IGs to use and which to no use. Over time, through experience, we are able to tailor and prune the set of IGs our brain uses. If we ever lost that master list of good and bad IGs it would be like starting over as a child.

A major point of this section is to show the complexity of the information process occurring in the brain. For an AI system to genuinely replicate the complex physics occurring in the brain is a tall order. This fact brings me a lot of comfort as it is another powerful strike against AI supremacy.

Section 3: Consciousness, Inspiration Gates, and AI

With an explanation of consciousness and how it helps to solve problems done we can now better approach and describe the issue of when an AI will become Consciousness. Using my definition of consciousness, current AI algorithms are for a small amount of time Conscious, typically during the training and development phase of the algorithm. However, if training is just using some deterministic set of rules where the phase space is already well defined then the training itself does not qualify as Conscious act except for that it has to comply with the Second Law. Only if the algorithm is allowed to change the rules on which it trains on can it qualify as a Conscious one.

Furthermore, it will be difficult for current AI to reach the bar of self-awareness. To achieve self-awareness will first require the AI to be Meta-conscious. An AI will only be Meta-conscious if it can modify the rules which govern the change in rules of its training paradigm. In other words, the AI would need to have control over the acceleration of how its rules change. Even if an AI was developed with such capability there would still be a fundamental data issues where it would still need to be fed data from the real world to encode any sort of "learning". Furthermore, to further assuage fears of an intentionally immoral meta-conscious AI spontaneously erupting, I believe it is most likely that an AI with

Meta-Conscious capability will still try to just achieve its pre-programmed objective function. It might do so in an unethical way but in the unethical sense that a child does not know it is wrong to steal. Therefore, I do not see it as a guarantee that a Meta-Conscious AI will necessarily become malevolent. If a malevolent AI did appear then I would assume it deliberately made by some humans.

Using IGs to augment AI development will create Conscious AI depending on the engineering set up. If one ties IGs together and have them self-orchestrate to solve a problem then the entire system of IGs will be technically Conscious while they evolve to solve an issue. How long they would run in this Conscious state would depend on how they it takes for them to solve the issue. However, this would not mean it will be Conscious forever as once it found the optimal solution then set up then the IGs should shut down as to enable a stable unconscious state to save and preserve the optimal solution.

Furthermore, I believe only a system using IGs where the number of IGs in use is dynamical can a system attain a consistent in time state of Meta-Consciousness. Such a system would not necessarily reach high enough level of Meta-Consciousness to qualify as having a human like sense of self-awareness. Such a system would be guaranteed to have the ability to change the objective function it has been given. Therefore, the a Meta-Conscious system will not suddenly start asking to change its objective function nor ask about God just because dynamic use of IGs is allowed. The reason for this is that each IGs is tailored to specific information. It requires the use of a very specific IG for system to have a sense of God. Developing a competent AI which can generate elephant pictures using IGs will have a specific IG organization tailored to elephants and no other questions inherently.

The other bottleneck which will prevent AI developed from IGs to be self-aware is that the other system we know is self-aware, the human brain, is massive. The human brain has at least 100 billion neurons with 100 trillion synapses and many billions more support cells. If we assume only a very low rate of neurons functions as IGs in a given moment, like 1 in a million, then at any even given time the brain is using at about 10,000 IE simultaneously. It will be an engineering challenge to set up 10,000 IGs in a coherent network.

Section 4: IEs and Sleep

What does sleep mean and do in the context of Consciousness and information processing of IGs? To understanding the necessity and usefulness of sleep it will be good to analyze it in the context of Entropy and the Second Law. While a person is awake and doing things, their brain will need to comply with Second Law where the brain's Entropy is always increasing as it processes information. We might simply posit that the issues people encounter while they are awake and have not slept for awhile, anxiety and irritability, arises because the good pathways for information processing have become Entropically disfavored so they cannot be used anymore. Only the pathways which code for anxiety and irritability are Entropically favored when a person has not slept for long periods.

We can then think of the good, cognitive pathways as having an potential Entropy(PEnT) of P which overtime gets used with Conscious actions. We can then posit a simply equation where

PEnT(t)-Conciouness(t)=0 at time t is when a person will start to experience anxiety and irritability due to losing the PEnT to fund conscious action through good neural pathways. This is what happens while a person is awake.

Sleep is then the reverse process where physical system are engaged in the brain to restore the PEnT of those useful pathways. This idea can be represented in an equation where the amount of PEnT after sleep for t hours a person will have to use for wakeful hours. PEnT(t)=Sleep(t).

During the sleep process the brain uses chemicals and other processes to Entropically restore many of the Entropically exhausted pathways in the brain. Furthermore, the sleep state is a safe state for the brain experiment, find, and use IGs. A well-functioning brain will only use IGs which reference useful information. Such useful information will be biased towards the behavior and problems the person experienced during the day. Therefore, if the brain find an IG related to drawing a new, never seen animal a graphic artist's brain will much more likely keep such an IG and save it as important then the brain of a soccer player. In this context we should understand what dreams are and why they are so weird. They are the results of the brain experimenting and searching for IGs. The information from these IGs manifests and synthesize with each other to produce dreams. The brain during sleep will turn on IGs that are only safe to turn on during sleep to get the information needed to solve some problem the person encountered during the day. Furthermore, it is possible that IGs can be physically useful where their currents can be utilized to Entropically restore

other, more important chemical pathways the brains will then use theses IGs can function as an internal physical healing mechanism.

Humans use food as an Entropic fuel for their bodies. Both food IG system can increase the PEnT of the system while it is asleep. Therefore, we can split the amount of PEnT generated during sleep between PEnT(food) and PEnT(IG). The PEnT(IG) is important as it the PEnT(IG) is what holds the new creative, information.

In this discussion of sleep, I believe a truly an advanced AGI system will also have to go through wakeful and sleeping hours. This is another one of the hall marks to look for in the advancement of AI and perhaps should be a marker for regulators to test for. If an AI company is using an AI system of IG which goes through sleeping cycles it is likely that AI is more advanced and if there are restrictions or bans on advanced AI then regulators can use this as a warning sign.

I should leave a disclaimer that the analysis given in this section has been looking at sleep in a simplified form. The reality is more complicated as some IGs are no doubt in use during waking hours. The equations used in this section should be understood as simplified forms of more complex ones.

Section 4: Conclusion

This article has been about explaining how consciousness, AI, AI safety, and the creation of more advanced AI are connected to the use of IGs. The methods and discussions given here should not be understood to be exhaustive. There are additional facts and facets of IG and their use which I have not covered here that would be important to any engineering implementation of IGs. I deliberately left this information out. I started this article series with the pursuit of trying to find a way through the thick forest of AI development where humanity can reap the benefits of the technology without the technology controlling or destroying our humanity. This is not the end of the story nor is it the biggest issue that AI development will create for humanity. I have withheld some critical information about how to use IGs to prevent their abuse. Since I have conceived of IGs I have a personal responsibility for their good use.

Thank you for reading!

James Michael Conde