

How free will, determinism, consciousness, and time interact with information storage and loss

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Abstract:

In the following, I will primarily use the concept of Information storage and information loss to first explain my understanding of consciousness. I will then show that there can be no such thing as determinism, not just at the quantum level, but also in daily living. Next, my understanding of what is free will, or the feelings that there is free will will be explored. Finally, I will present how time is also tied to this issue of lack of information. All of these “long discussed” concepts are, in my view, tied together in how our mind works and in how information, or lack of information plays an important role. This is a “thought” paper, however, most of the following bits and pieces can be backed up with academic papers, but I avoided that here to make for a short, easy to follow and I believe somewhat original thoughts on these complicated topics.

Consciousness:

To begin, I will discuss first sight then hearing, evolutionary processes that took a long time to develop and “perfect”. In the process of “seeing” we cannot really see the real world. However, evolution has developed a very good eye for us which captures a very good depiction of events in front of us. But the term “captures” is very important, as we really only capture a small bit of what is in front of us and what we do capture is immediately turned into chemical and electric impulses that are sent to the brain. What our brain sees is not the glowing sunset or a stately pine tree, it is simply lots of chemical and electrical impulses. However, here is where evolution has done some impressive work, because lots of chemical impulses would give the brain little ability to dodge a branch or not step off a cliff. These impulses have to be interpreted. To do this, the brain seems to have created an artificial replication of the real world that duplicates what the eyes send to it. This is what we “see”. This must be what the brain is doing, as we cannot deny that we miraculously “see” what we suppose is the real world. This “seeing” seems completely natural and is not problematic to comprehend as it is simply what the brain does to navigate through the world. Of course, way back in time the first “sight” replication in the organism was probably only a sensor that mutated into having the ability to register something like “light” or “dark”. And the first problem solving was maybe “go to the light” (possibly for better photosynthesis ability) or “avoid the dark”. This “sensing” got more sophisticated and maybe included multiple sensors in some grid pattern which gave greater ability to go to the light and avoid the dark. Consider possibly going from a “one square” view of the world to a 9 square view where light in the side sensors would indicate the direction to go, to a 1,000 squares, and finally millions. This original “replication” was only a very vague and simplified recreation of the real world, but it gave the organism a way to navigate and be fitter than an organism without this ability to recreate the world inside their “brain”. Of course, what we recreate in our brains may not at all be what the real world looks like, but it is what our minds have made out to be what the real world needs to look like to survive. This was the beginning of

consciousness! And, although extremely sophisticated today, one cannot deny that we do recreate what we see and do so extremely well and extremely fast. This replication of the world allows the brain to problem solve and, hopefully, avoid the cliff. Now, we also developed a place to store what we see into memory, and this is actually quite important for consciousness to be understood. In the beginning, it was probably just the ability to store the information that seeing a light patch was also where there was food. So, the next time the organism sees this light patch, it compares this to the memory of getting food. For us, this is probably because we need to be able to “look” at what is in our memory to know (learn) from previous experiences that when we see a cliff, it is dangerous. The only way to do that is if previous replications of sight are stored in memory. Indeed, if it is not stored in memory, we cannot have consciousness beyond the immediate seeing of the world (no real thought processes).

Ok, so we then use this replication to quickly compare to other remembered replications to know how to problem solve. The way our brain worked this out, and probably one of the simplest ways to do this, is to compare pictures in our brain, that is we began at some time to actually create this replication of the world we see in an image that was able to be stored into memory and be brought out to problem solve. One aspect that we call consciousness, is that aspect of seeing images in our brain. I must admit, our brain is very fast at this task, almost unbelievably fast at this as we can capture, then process, then replicate in our brain an image, actually an ongoing film of images at a dazzling speed, but this is what we do all day long. Most of these images, or “films” are not stored into memory, they become lost information. For instance, I can't recall my walk in the woods yesterday, except for perhaps a few scenes, such as a squirrel chasing another squirrel around the trunk of a tree. Even that “film” is quite limited. But enough is captured in memory that I can walk without falling off a cliff or getting hit by a branch. So, the seeing part of consciousness is really just our evolutionarily derived process of replicating the real world, and then at times bringing what is stored in memory out as just this same replication of the world. It “looks” just like the real world, like a conscious real world, but it is in fact just a “tape” being recalled.

Now the hearing part of this story is tied more closely to what we think of as consciousness. Just like vision, we only take in sounds that vibrate little hairs in our ears. These vibrations are then sent to our brain as chemical and electrical impulses that really make no sense at all if looked at as just a jumble of impulses. However, just like with seeing, the simplest way for our brain to make sense of these impulses was to create a replication of sound in our brain, in our consciousness, that could be stored into memory. Of course, eventually our brain (ancestors brains) developed the ability to turn these chemical signals into sounds that were a good replication of the real world sounds and then turned them into language that was again a representation of the real world. We seem to bring these replications of sound out of memory in an unstoppable torrid, that is, we talk to ourselves all day long. Developing language was like a double translation, and perhaps more important than simply turning chemical audio or visual signals into a replication of the audio and visual world. A sound that represented “tree” was also tied to the vision of a tree in memory and a whole world of interior dialogue and visions became possible in “consciousness”.

Determinism:

So, if all we did was to “see” this replication of the world, and “hear” this replication of the world and turn some of that hearing into language, we would be a very simple organism. One that could avoid cliffs, and find food, and problem solve at the simplest levels. But the “problem solving” part really took off in our evolutionary past. The problem solving part is particularly tied to what I alluded to above, that is, “loss of information.” We lose the vast part of information that we can take in. Our visual ability really is incredibly good, but it is also extremely limited in many ways. For instance, we only see certain wavelengths of light, we only have 20/20 vision, and most importantly, we simply cannot store but a small fraction of what we do see. So, we really see the world “dimly.” However, what we toss out is mostly not determined by some sequencing of events, lots is thrown out by a simply gross process. Of course, it may be sorted, or tied to previous memories or decision trees and then tossed, but it may also be simply cut out in large undeciphered chunks. The same with what we hear, there is no room in memory for remembering everything. The following example illustrates that seeing and hearing loss of information is tied to the determinism issue. If we were walking through a forest and there was a particular plant there that was very important to know about, but we simply were uninformed about it, we would probably throw that chunk of visual memory out. If the next day, we were informed about how important that plant was, we would simply not be able to say anything about it as it was not stored in memory. (If we dug hard enough, we might be able to retrieve it, but after a few days, very unlikely.) However, what if that chunk of memory was stored because it was part of the memory of the squirrel running about the tree (the plant was next to the tree). Then we would remember that plant. Purely by chance, our world might be changed! One can see that there was no “determination” here as the squirrel memory was what we recorded and the plant was either recorded as part of the memory or not. In our daily life most of what we see and hear is tossed, either by some very generalized rule or probably often by no particular rule at all. There is simply no room in memory for it. Which means there is a lot of room for true chance in how we make decisions. Our actions cannot be wholly determined as there are many errors in processing and lack of space in memory.

As a further note concerning determinism. On the very tiny level, the quantum level, there is random and probabilistic activity which means that there is no determinism at that level. However, one could posit this as a lack of information on what is happening next. At the atomic or molecular level, one often hears the argument that if one knew the position, momentum, and direction of all particles, then one could determine where every particle would be from one second to the next. But, even at this level there is radioactive decay, which occurs randomly. So, determinism would rule for a short time, until some particle decayed and messed up the whole system. Again, it is lack of information that cuts short a deterministic world. (There is also the sticky issue of Browanian motion and mathematical problems such as the three body problem that also point to a lack of determinism above the quantum level.) Again, at an even higher level, our daily living level, there are many instances where complete information is

simply not available, which leads us to the conclusion that even though many events seem to follow a deterministic path (a Newtonian world one might say), that path can be cut short at any moment by lack of information. It seems simply impossible to have a world where information is completely and absolutely known.

Free Will:

But now on to free will. Because one of our main ways to solve problems is to process memory via our recall of language, we often “think” in terms of language. Again, this “consciousness” is really just the recollection of reconstructed memories of the real world. However, because there is a lot of “dimness”, we cannot always see or construct in our brain or in words a direct answer to our problems, cannot find an actual memory of how we solved a problem in the past. This forces our problem solving brain to come up with unique and creative solutions, that is solutions that are not directly connected to precise memories of what we have done in the past. We have developed the ability to string together parts of what we have heard into new sentences, new thoughts that are now stored into memory and are compared to other possible solutions. So, once we think up a possible solution and it is stored in memory, we can now act on it. It is truly a “new” idea, a “creative” thought, but it was formed due to necessity because of lack of information. Or, perhaps, not in exactly that order. Experiments in psychology indicate fairly strongly that we often start “acting” prior to the verbal thought to act is processed. For example, when we see a cliff in front of us, our problem solving process might put all the information together to start us on a path to stop walking prior to pulling all the words out of memory and putting them together to make the thought, “stop walking”. Indeed, this seems to be exactly what happens in many cases where speed is necessary. Which means that in some cases (maybe most), the projection of a language solution in consciousness occurs after the solution has been worked out in the problem solving process in our brain. We are “deceived” into believing that we worked out the solution in our conscious “talking” through the solution, but the talking part is really just a way to make sure that the solution is stored into memory. I’m not sure if all actions are decided prior to putting them into words. Perhaps some of both processes are at work, but the conscious “words” are seemingly the end stage, not the beginning stage of coming up with solutions. The words are possibly produced to mainly store them into memory.

Time

Time appears to us humans to exist because we humans have developed memory (the ability to store information), and therefore, we have the capacity to remember past events and to consider future events. However, the past does not seem to exist (not exactly a provable point), nor does the future, so what time “is” is quite a mystery. In the quantum world, there seems to be a probability associated with possibly everything and in some cases, such as in entangled particles, time seems to not apply, or perhaps it is better to say that information seems to be shared instantaneously no matter the distance between two entangled particles. It would seem that the possibilities for the future are contained in random probabilities, and the past might also

be unattainable as it was also the results of infinite random probabilities. Unknowable events make it difficult to navigate a way forwards or backwards in time. There is just no solid information on where to go. That is unless there is some huge universe-computer that is storing all of the information on every event that occurs that could be consulted to know how to go back in time, but that seems to be a rather improbable situation.

Unfortunately, there are several complications that I have no answers to. Either there is truth to the multiverse notion, as every possible past is possible as every particle might have been anywhere in the past (as are all possible futures); or, somehow the probability of where a particle was in the past “collapses” into one definite place as time moves forward. If the past is fixed, it does not change the difficulty of going backwards, as where is this information located/stored? I do not believe there is any mechanism for actual particles to store any information. Actual particles do not even know where they are. So, as one does not know the present location of anything, there is no place to start the process of going backwards, other than the “human” memory/knowledge that there is this fixed past.

## Conclusion

So, consciousness is really put together mainly from previous real world pictures that are recreated in the brain and real world sounds that are also recreated in the brain. A fascinating way our evolution made the real world visible and heard to us, but probably the only way to make sense of raw chemical and electrical signals being sent to the brain. We can't be wholly determined as so much of the information is either never stored or is tossed out in a chance manner, so many actions probably have an uncertain aspect to them. And free will, well that is also mainly a projection of what we are storing into memory after action has started. We perceive we have free will as the decision making is finalized in language. That decision making is based on error, probability, learning, genetics, and chance. “Will” is probably just based on some nerve signals being sent “prior or after” with “more or less” strength than others nerve signals that then guide us in one direction over another. Of course, there is also some problem solving interaction being made with our memories in terms of accepting or rejecting the actions (nerve signals) that end up either first or with more strength. This comparing to memories might force one to reconsider or suspend action until some solution fits the situation better than the first one thought up. Some of this “thinking” is put into language and then stored into memory. So, “free will” might be more like a freedom to accept and or reject solutions (probably not in consciousness yet) until the interaction of memory and proposed solutions have a high likelihood of succeeding. Then, problem solving mechanisms give the go ahead to act, and that is put into language in consciousness, and we store it into memory.

Overall, it is interesting that when looking at understanding consciousness, determinism, free will, and time, information storage, information loss, and lack of information seem to be a key to understanding these concepts.

