

Dr. Berdine,

I found your grand rounds discussing consciousness and free-will riveting. I have a few comments and questions regarding your presentation.

1. In your discussion you stated “I’m not the one saying that we shouldn’t have rules. Cashmore is saying that rules are silly.” I am little confused how anyone - even a staunch determinist - could *really* hold that opinion. Perhaps I am missing something?

2. It seems to me that even if humans really are an extremely complex bag of chemicals (similar to weather phenomena) who have no more free-will than a bowl of sugar, the environment nevertheless still plays a crucial role in our decision-making process. The molecules in our body interact with the environment, which is part of the “equation” that determinists believe in – one of the variables that influences our ultimate “decision” or course of action.

In my opinion, every action that we perform is done using a conscious and/or unconscious utilitarian type of reasoning – we “choose” the path that we think leads to the best result. There’s absolutely no reason why I would ever do anything that doesn’t conform to this type of reasoning – if we do it, it’s because we think that it’s the best thing to do. This holds true for both free-will *and* deterministic models.

So, part of the reason I don’t break the law (i.e. one of the variables in the sophisticated equation that determinists believe in) is the awareness of the presence of a law enforcement entity that will punish me if I get caught. It’s a simple risk vs. reward calculation. Rules certainly play a pivotal role in maintaining order in society by acting as a deterrent - perhaps it would be more precise to say that our existing rules are not *fair* if determinism was found to be true?

3. In your presentation you state “...that every electron in every molecule contains the evidence for free-will by behaving in a completely random way that is beyond explanation.”

If I understood you correctly, you do not believe machines or artificial intelligences will be able to successfully replicate human consciousness and free-will. Although my understanding of quantum physics is embarrassing at best, I fail to understand why this phenomenon privileges human beings over machines. Machines and artificial intelligences are made up of electrical systems just like humans, so why would your argument not also extend to machines and AI? What, if anything, is unique about humans? This question is one that, to the best of my knowledge, has yet to be answered with a convincing secular rationale.

4. What if our actions are influenced by a truly random phenomenon?

In order for your argument favoring free-will to hold, the “thing” influencing the electrons *must* be you (or part of you) by definition. If we find that electrons (and by continuation, our actions) are influenced by a truly random mechanism, how would this affect your opinion and/or argument that humans have free-will? Do you equate chance with a foreign agent (e.g. another person) or is chance somehow different?

5. Continuing the previous question, how much control is necessary for a desirable or satisfactory free-will? Must we be in complete control over our sentient capacities at all times (while awake)? Certainly there are times when we don’t feel in complete control over our own bodies. For example, moments of extreme excitement, anger or fear seem to frequently influence (if not dictate) our decisions in some situations. If I don’t have control over these emotions/reactions, are they not also deterministic and undesirable?

6. You were right to raise the question of “What is me?” We must first be able to define agency before trying to ascertain who or what the agent is. It seems we are getting ahead of ourselves in these discussions if we can’t even define what it means to be “me.” Delving deeper into the determinism vs. free-will debate will be futile without first resolving this fundamental question. I’m afraid this, like many philosophical questions, may be impossible to answer without using a com-

pletely arbitrary, subjective definition that many will inevitably find unacceptable. Do you agree?

7. Even if free-will was nothing but an illusion, *why* do you care? *Why* is it bad to live under a pleasant illusion? This question is similar to the pleasure thought experiments, where one is given the opportunity to enter into a virtual reality and live in perpetual bliss. It's interesting to me that most people (at least in my experience) claim they would reject the virtual reality merely because they would know it's not "real" – whatever that means.

8. Perhaps one of your concerns involves what would happen to society if this deterministic approach to human action became the common, accepted philosophy taught in schools. Would this change the way we act? Is *feeling* and truly believing that we are in control of our own actions a necessity for moral action? It seems that if we stop believing that we are in control of our own actions, our behavior might permanently change. Would determinism lead to apathy?

People are and should be held responsible for their actions despite which philosophical theory is used. However, I'm worried that if this deterministic thinking begins to take over, people will fall into the trap of not taking responsibility for their actions, or at least feel that they shouldn't be obligated to take responsibility. If we were to discover that determinism is true, would it really be in the best interest of our race to make the discovery public? Perhaps it would be safer to maintain the illusion of free-will? However, in today's society, I doubt a secret this big would be able to be kept secret for long.

How do you think society would be affected if determinism was proven true and made common knowledge? What would the world look like?

9. If determinism was found to be true, I'm skeptical that society adopting such a radical understanding of human nature would be possible. Certainly we can agree that free-will is an extremely powerful illusion, but would it be humanly possible to believe that we aren't in control? Perhaps the illusion is "too good"

to escape. Do you think this worry is relevant to your discussion?

10. In conclusion, I believe that free-will is based on the assumption that an individual *could have acted differently* if placed in an identical scenario. It seems to me that the only way to truly test this would be to travel back in time to passively observe the individual perform the action. Even then, the individual's success or failure in deviating from the initial course of action is not proof that free-will is existent or non-existent. If it is impossible to prove or disprove free-will, is this entire conversation a moot point?

David Michaels

Medical student, School of Medicine, Texas Tech University Health Sciences Center, Lubbock, TX
9/13/2015

RESPONSE TO DAVID MICHAELS

Thank you for attending the lecture and sending these questions and comments. I think that anyone interested in this topic should read Dr. Cashmore's essay ¹. I will respond to each point in order.

1. Dr. Cashmore does not think that rules are silly per se, but rather the way we arrive at rules is silly. When Dr. Cashmore says that we have no more free will than a bowl of sugar, he is stating that our behavior is a reaction to genes, environment, and what he calls stochasticism rather than conscious decisions. Since we do not choose our actions, we should not be considered innocent or guilty any more than we consider a lightning bolt guilty of killing someone or damaging property. Dr. Cashmore makes a case for rules that enhance order as being a necessary part of evolutionary progress. Although Dr. Cashmore does not say this explicitly, he implies that philosophy is nonsense. Rules should be set by a panel of experts based on Utilitarian Calculations that determine what is best for society. Evolutionary mechanisms will ensure that the "experts" will be those who are best at making rules for everyone else to follow. I have a great deal of dif-

faculty accepting Dr. Cashmore's position. In my view, evolution has nothing to do with determining who wins elections, but rather the most skilled liars become the leaders of modern democracies and these liars make conscious decisions to enhance their power over the rest of us while caring not one whit for the "public good" whatever that is supposed to mean.

2. We are a complex bag of chemicals. Nobody disputes that notion. The debate is whether we have something extra called free will or we are **ONLY** bag of chemicals. Dr. Cashmore would argue that your choices of action are an illusion. Your actions in response to a variable environment input do seem to follow a pattern of greatest benefit, but your actions are programmed into you by evolution. My position is that something extra called free will makes choices based on our subjective ordering of priorities. A deterministic system would follow rules but not choices. Our immune system attacks invading organisms according to deterministic processes. Our immune system might be an analogy to what Dr. Cashmore is referring to as rules of punishment.

3. Machines are deterministic. Machines follow commands. Machines do not make choices. Faced with identical inputs, the machine will always act the same. The rand() function in computer languages is **NOT** random. The function generates pseudorandom numbers in a perfectly predictable manner. The deterministic view is that humans are no different than machines. We only appear to make choices because our programming is complex. My position is that the fundamental essence of being a human is making choices rather than following a program of commands. Yes, machines have electrons, but as best we can tell, nothing from outside the physical universe is pushing these quantum decisions in one direction or the other. My contention is that something outside the physical universe called free will **IS** pushing some electrons within the brain one direction rather than another leading to conscious choice or volition. One view of God would be an entity capable of pushing all the electrons (and every other quantum event) in one direction rather than another while humans have

access to a small number within their own brain. The electrons are not the agent making the choices. The electrons are a lever or switch that allows a choice originating from outside the physical universe to be expressed.

4. There is a famous joke about coin flipping. We are told that a coin flip came up heads 10 times in a row. Someone asks a mathematician and a Mafioso what will be the result of the next coin flip. The mathematician answers we don't know since the next coin flip is random. The Mafioso answers heads since the coin is obviously rigged. Who is correct? This is the nature of statistical analysis. Is a sequence of events random – that is without deterministic explanation – or is it determined by some mechanism? A statistical analysis can never prove anything. It can only give a probability that a given sequence of events was random. The p value is the probability that a data set can be explained by the null hypothesis that is purely random and no deterministic mechanism. No experiment can prove that human action is either deterministic or random as there will always be Type I and Type II error.

What do we mean by truly random? A truly random event has no deterministic explanation; otherwise it would no longer be random. If we were to discover a deterministic explanation for quantum events, then I would be wrong. I do not think that we will discover a deterministic explanation for quantum events. Freeman Dyson and Roger Penrose seem to agree with me. That does not prove my position, but credible thinkers are thinking along the same lines. Roger Penrose joined the free will camp based on Godel's Incompleteness Theorem which states that a complete number theory requires at least one axiom that cannot be proven. Dr. Penrose believes that since the human mind is capable of creating number theories, that the human mind contains an axiom that cannot be reduced to physical processes within the laws that govern the physical universe. The axiom can be called free will. To be sure, there is disagreement among scholars whether the Incompleteness Theorem applies to the Free Will debate, but Godel seemed to agree. It seems to me that complex sys-

tems cannot assemble themselves. Self-assembly or bootstrapping requires instructions to load or copy the necessary algorithms within the bootstrap. An iterative process requires instructions or algorithms by which to obtain the next iteration; iteration requires a first step to pre-exist.

5. We would be in a heap of trouble if every action required a conscious choice. What if someone had to consciously think about every heartbeat, every breath, every secretion of hormone molecule, every activation of every white blood cell, etc.? The vast majority of our activity is controlled by deterministic processes. What makes us human is that we can alter the programming and add new subroutines according to choices rather than algorithm.

6. My identity is NOT a given molecule, or a given cell, or even my brain. My identity is the agent outside the physical universe pushing electrons in my brain in certain directions to achieve my choices. In my opinion, current law wrongly associates identity with a physical body rather than the agent responsible for human conscious choice. I think that Dr. Cashmore would argue that identity is a meaningless concept.

7. If Dr. Cashmore is correct and I am wrong, and free will is an illusion, then I would not be capable of caring one way or the other. I would merely react to the next set of inputs in a deterministic fashion. I think that I am right, so I do care, because I consider myself to be a free man capable of making choices. You are asking why we would not be happy to live in the Matrix if all of our wants were provided. The problem with that question is that having all of our wants provided is incompatible with the reality of scarce resources. Eventually we would want something that could not be provided and we would be unhappy that we could not strive to achieve it.

8. I think the deterministic view is what is being taught in public schools. I think that consideration of right vs. wrong is being systematically replaced with obedience to authority. This is the area to which Dr. Lado

objected, my association of determinism with authoritarianism, but I think they are inseparable. If people believe in determinism they can become fatalistic or apathetic, but they can also decide that restraint and guilt are illusions and become libertine. Literary treatment of these issues goes back to Huxley's *Brave New World*. It should be emphasized that many people believe in Determinism yet continue to act as responsible people. So, belief in Determinism does not make one a tyrant or a Communist, but I think these people are trying to support inconsistent viewpoints. Determinism cannot be proven true as discussed in number 4, but government can certainly attempt to indoctrinate people with this thinking.

9. I think that deterministic societies do exist in nature. I suspect that insects are automatons and the hive society is an example of a deterministic society. I have no doubt that bacteria and viruses are deterministic and they seem to be doing quite well within their deterministic framework.

10. I think it is impossible to prove that free will exists or that it does not exist. I agree with your example of time travel and I do not believe time travel is possible. What makes the flow of time irreversible is quantum choice. Once a quantum decision is made, it is irreversible; the tape cannot be rewound. The other problem with your thought experiment has to do with the Uncertainty principle. We cannot observe anything without changing it; the process of observation involves irreversible quantum interactions. So, I think it is impossible to prove free will, but the question is not moot at all as long as someone is suggesting that Determinism demands that I surrender my autonomy.

Gilbert Berdine
9/21/2015

REFERENCES

1. <http://www.pnas.org/content/107/10/4499.long>