

MEETING REPORT

The 3rd Annual Meeting of the Neurophilosophy of Free Will Consortium

March 11th~14th, Palm Springs, CA

CHEN TIANQIAO & CHRISSEY INSTITUTE

THE 3RD ANNUAL MEETING OF THE NEUROPHILOSOPHY OF FREE WILL CONSORTIUM

By Alice Wong

Sandwiched between the weekly Palm Springs Street Fair on Thursdays and Pi Day (3.14) 2022, members of the Consortium on the Neurophilosophy of Free Will gathered to hold their 3rd Annual Meeting to exchange ideas at the intersection of scientific research and philosophical inquiry on free will. Led by Dr. Uri Maoz, who is affiliated with Chapman University, UCLA, and Caltech, this group of 60+ attendees greeted new friends and old, in-person, for the first time since the COVID pandemic moved meetings online for the past two years.

Born out of a desire to bridge the gap between age-old philosophical inquiry of free will and its younger sister field of neuroscientific investigation on free will, Dr. Maoz organized a series of meetings on the Neurophilosophy of Free Will, starting in 2017. Now, it has grown into a multi-year project supported by the generosity of the Sigtuna Foundation, Fetzer Franklin Fund, the Fetzer Memorial Trust, the John Templeton Foundation, and now also the Tianqiao & Chrissy Chen Institute.

One rare, unique, feature of this conference helped open communications between early-career researchers and senior, established researchers. Many lecture presentations in this conference featured early-career researchers presenting their work in tandem with their Principal Investigators, helping to establish the early-career researcher's presence much more effectively than a picture on an acknowledgement slide, at the end of an hour-long presentation deck of an established researcher. This will undoubtedly be a boon for these early-career researchers not only by re-activating their sorely atrophied in-person presentation skills, but also by establishing a memorable presence with future mentors and colleagues.



CAN AI HELP US UNDERSTAND HOW HUMANS MAKE DECISIONS?

By Alice Wong

The latest annual meeting kicked off to a strong start, with Dr. Walter Sinnott-Armstrong from Duke leading a discussion on whether free will comes in degrees of freedom (e.g., like a thermometer measuring temperature in degrees Celsius/Fahrenheit), or whether it is a binary variable (e.g., like saying whether the temperature is “hot” or “cold”). In breaking down what this question might mean, members of the consortium brought up many interesting points of contention. For example, does the perceived degree of freedom change depending on whose point of view you are talking about? Here, we might think of the example of a child who does not know how to open cabinet door that has “child-safety” locks, versus a parent who does. For the same action of opening the cabinet door, does the child have less freedom compared to the adult? What are the important factors that differentiate the amount of freedom the child has vs. the adult, despite talking about the same potential action of opening the cabinet door? More generally, is it the difference in costs, effort, barriers, or the availability of alternative actions (e.g., could the child open the cabinet in a creative, unexpected, non-standard way?) that play into the consideration of freedom in this context?

Importantly, Dr. Sinnott-Armstrong proposes that would be interesting to ask a general audience to make judgements about degrees of freedom in various scenarios, between various “agents” (human or otherwise), to create a dataset on how human intuitions resolve various dilemmas. Then, with this data in hand, it could be possible to train a computer to make predictions in-line with consensus human intuition. Once the computer has been trained to do so, it would become possible to interrogate how the computer algorithm makes the predictions it does, which might translate into insights on how humans (as a group) make choices. If done in multiple cultural contexts, we may find out what

considerations matter more to one culture compared to another, with interesting applications to bioethics concerning Artificial Intelligence (AI), if one thinks of “human” as one culture compared to “AI”. We can start comparing decision factors “across cultures” with the important difference that with AI, we can intervene on the decision-making and directly increase or decrease certain factors deemed desirable or undesirable by the “human” culture (in a way that might not be ethical or physically possible when considering another human culture, e.g., people of foreign nationalities).

With these questions primed in mind, neuroscientists and philosophers went on to present new empirical data and new conceptual thinking on various angles related to free will, such as free choice, voluntary action, conscious vs. unconscious deliberation, and effortful choices over the 4-day conference.

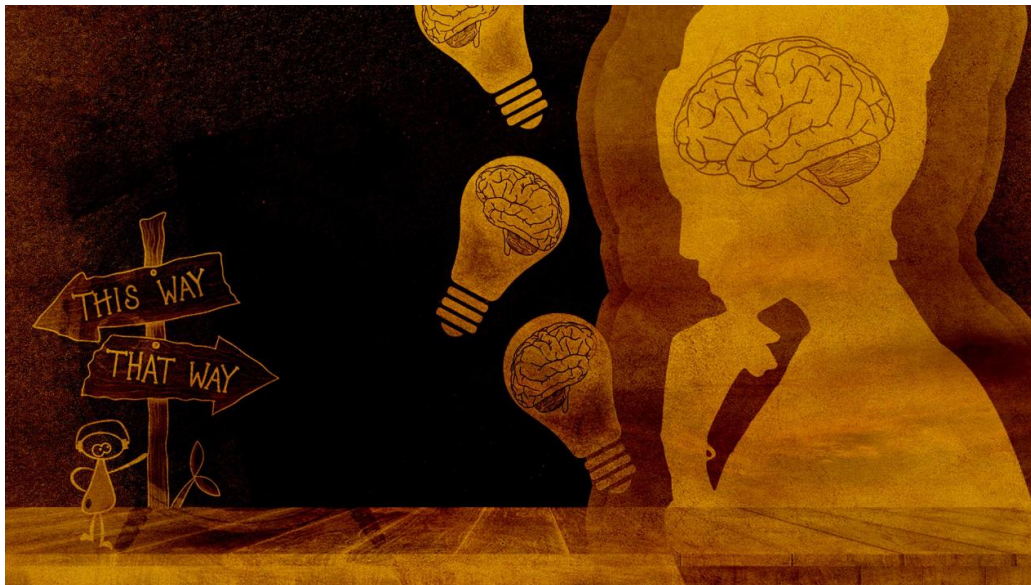


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DEBATING THE READINESS POTENTIAL

By Alice Wong

When discussing consciousness and free will, one perennial controversy always makes a star appearance: the Readiness Potential. Also known as the “Bereitschaftspotential,” the Readiness Potential refers to electrical activity that can be detected in the brain immediately *before* people report deciding to make a willed action such as a small, inconsequential hand movement.

This has been interpreted as refuting the possibility of free will, since if a person’s action can be accurately predicted based on brain activity that *precedes* their decision to move, then their decision cannot be said to have caused their action. In other words, the existence of the Readiness Potential suggests, at least to some researchers, that our experience of deciding is an effect, not a cause, and that the roots of willed actions lie “upstream” of the conscious decision to act.

This has led some researchers to argue that the experience of willing an action to happen reflects not a causal decision, but rather a response — not a mental process that triggers an action, but rather a reconstruction or retroactive report about prior brain activity. If that were the case, then our experience

of making a conscious decision would no more cause a subsequent action than a morning weather forecast causes a rainstorm to arrive the following afternoon.

At the 2022 Annual Meeting, however, researchers generally resisted such interpretations of the Readiness Potential. Some attendees argued that earlier interpretations were logically flawed; others noted that even if such analyses were logically sound, they wouldn't necessarily reveal much about real-world decision-making, or generalize to situations in which actions carry meaningful consequences.

Still, researchers continue to investigate the Readiness Potential, perhaps because there are few other neural signals that offer the same intriguing glimpse of brain activity prior to conscious decisions. Advances in computational neuroscience and neural imaging could reveal other pre-conscious neural processes in the near future, attendees said — though it's too soon to know whether such breakthroughs will lay the Readiness Potential to rest once and for all, or stir up new controversies that will take starring roles in future conferences.



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MOVING AWAY FROM THE LIBET PARADIGM

By Cara Lewis

Both philosophers and neuroscientists at the conference endorsed a call for the field to step away from the Libet paradigm and embrace new techniques that resemble real-world decision-making. The Libet paradigm uses an introspective and retrospective report of when a subject wanted to move their finger by remembering the position of a dot on a modified clock. Almost every aspect of the Libet experiment was cast in a doubtful light: the causal role of the Readiness Potential, the validity of subjectively

reported time of intention (W), and the overly simplified and directed action of lifting a finger or pressing a button. As a whole, the laboratories presenting at the conference brought forth refreshing and complex paradigms. A Dartmouth College laboratory currently monitors brain activity when prompting their subjects with open-ended questions to simulate real-world nonbinary decisions. At Chapman University, several research teams use pupillometry and gaze biasing data to predict decision outcomes. Laboratories from the National Institutes of Health and Chapman University discussed ongoing research using stimuli-masking paradigms. Masking experiments may give insight into how the brain carries out 'unconscious' information processing and decision-making throughout a typical day. These innovative paradigms and research techniques reflect a higher appreciation for the complexity of real-world decisions and the impact of collaborating with philosophers who are keen on bridging the divide between clean-cut, simple experiments and the multifariousness of natural and social settings.

DO ANIMALS HAVE FREE WILL?

By Cara Lewis

The philosophical debate on whether animals have free will or volition to the extent of humans is unresolved. Still, neuroscience has long depended on animal models to break down complex behaviors and utilize more invasive research techniques such as optogenetics. At the 2022 Annual meeting, monkeys and *C. elegans* were referenced as subjects for creating computational models of voluntary decision-making. With relatively simple organisms such as the *C. elegans* used in a laboratory at Harvard University, observing single-cell activity during decision making is more easily accessible. In addition to modeling volitional manipulation, genetic modifications, single-cell recording, and other invasive methodology could help evaluate concerns over whether animals possess a sense of agency and volition comparable to humans. On the other hand, it would also be valuable to understand the interplay of associative learning and volitional decision-making in consciousness and free will studies, primarily since monkeys are frequently used to demonstrate associative learning and conscious awareness in different experimental settings. Even though there are no concrete methods to measure the subjective decision-making experience in *C. elegans* or monkeys yet, animal modeling seems to be an asset to the neurophilosophical field with plenty of untapped potential.

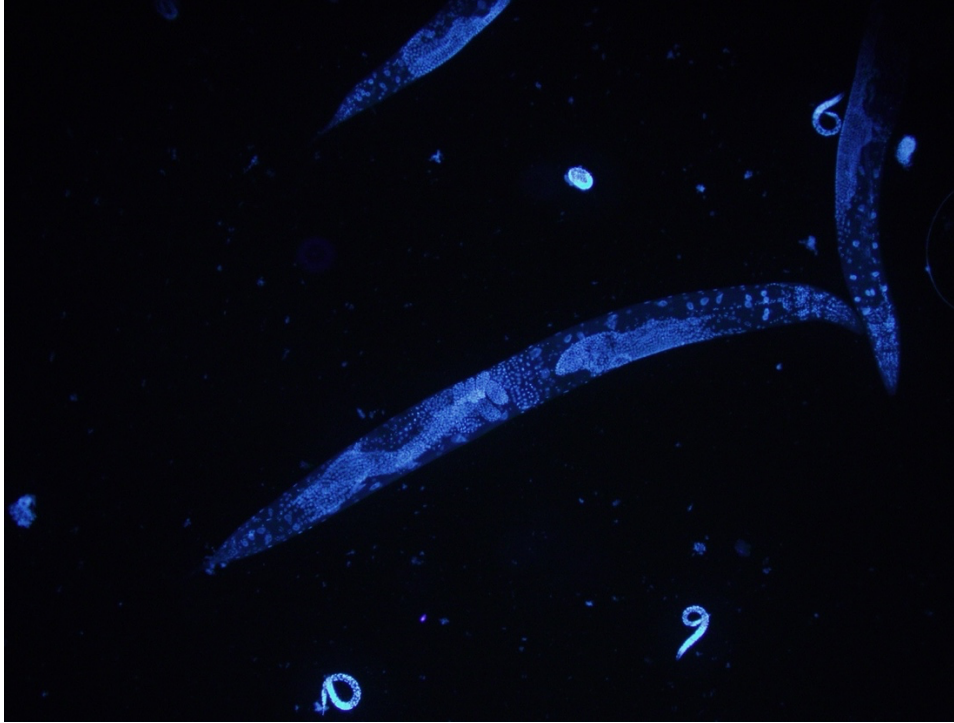


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ETHICAL IMPLICATIONS OF FREE WILL: 3RD PARTY PERCEPTIONS OF RESPONSIBILITY AND LEGAL RAMIFICATIONS

By Cara Lewis

Duke University used the example of the 2019 Lakewood Semi-Truck Crash as a model for retrieving lay opinion on responsibility when the degrees of agency and reported conscious awareness of the actor fluctuate. The 2019 Lakewood Semi-Truck Crash involved a truck driver who claimed to not see an emergency exit-ramp sign when the brakes on his truck failed. The crash was deadly and originally the driver was charged with a prison life-sentence, but public opinion was largely split over the driver's responsibility and eventually his sentence was changed. This example brings to mind the conventional ethical implication of investigating free will: 3rd party perceptions of responsibility and legal ramifications. On the other hand, creating computational models of decision making, investigating decision biases, and influencing decisions while maintaining a subject's agency are all topics of study that can shed light on the role consciousness plays in voluntary movement. However, as recent strides in choice manipulation and modeling have been made, these interest areas pose an ethical dilemma where research that is conducive for scientific and philosophical resolutions can be taken out of a laboratory context and used to limit another's voluntary control. In a standard example, marketing companies could use information from gaze-biasing experiments to manipulate consumer decisions. As the neuroscientific field of volitional movement grows, its ethical considerations should develop accordingly.

A NEW BOOK TO STANDARDIZE TERMS AND DEFINITIONS

By Cara Lewis

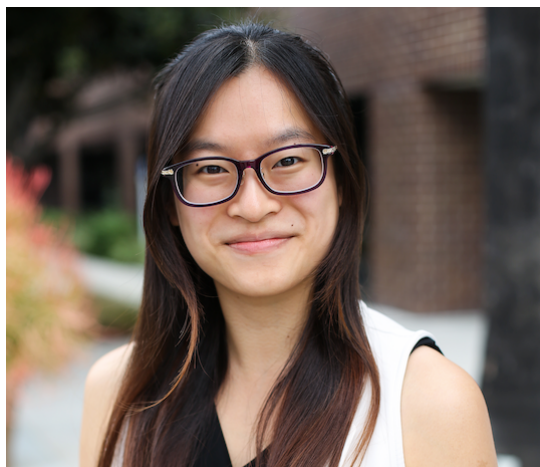
At the conference, an overarching point of contention between neuroscientists and philosophers was the lack of standard definitions for fundamental terms in the neurophilosophy field, such as 'volition', 'intention', 'urge', 'awareness', 'responsibility', and 'agency'. While more a headache for neuroscientists than a fascinating debate topic, semantics are vastly vital for this emerging field. Distinguishing 'ability' from 'effort' and setting a baseline standard of what 'proximal intention' describes is necessary to uniformly evaluate data and examine the role of consciousness in decision-making. For example, if a group of researchers cannot decide whether the concept of proximal intention requires conscious awareness of the intention to move, how can this group come to a coherent conclusion of whether or not proximal intention exists when working with dramatically different understandings of the semantics? Even more confusing is when 'attention', 'awareness', and 'consciousness' are used interchangeably or with varying definitions. Consensus on the need for standard terms came from conference attendees, presenters, and neighboring field critics alike. The benefit of an interdisciplinary group like the Consortium is that definitions introduced by the group will have relevance and significance in its defining nuances in both fields for easier collaboration in the future.

The group has worked together to clarify definitions in their new book, [Free Will: Philosophers and Neuroscientists in Conversation](#), Uri Maoz & Walter Sinnott-Armstrong, editors, Oxford University Press, 2022.

The writers thank Dr. Mark Hallett and Dr. Uri Maoz for their comments on and guidance on the writings.



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