

NeuroView

The Learning Salon: Toward a new participatory science

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The Learning Salon is an online weekly forum for discussing points of contention and common ground in biological and artificial learning. Hosting neuroscientists, computer scientists, AI researchers, and philosophers, the Salon promotes short talks and long discussions, committed to an ethos of participation, horizontality, and inclusion.

Introduction

Because of our wisdom, we will travel far for love As all movement is a sign of thirst, and speaking really says “I am hungry to know you.” — Hafez (*The Divan*, 14th century)

The culture of salons flourished in Europe in the 17th and 18th centuries. A salon is defined as “a gathering of people held by an inspiring host. During the gathering they amuse one another and increase their knowledge through conversation. There were other highly relevant characteristics of these salons: the hosts were predominantly women, and the conversation was to be polite, civil, and honest. Justine Kolata, in a piece exploring the history of salon culture, its impact on European thought, and the characteristics of salon regulars, states:

“Those participating in a salon understood that they were entering a space in which typical forms of valorization such as wealth, social status or family lineage were not prioritized...The ideal salon participant was a person who was uniquely interesting and offered fresh ideas that were well communicated and advanced the conversation. He or she possessed an innate love of learning, exhibited a reflective intelligence, firmly held principled opinions but also demonstrated the

utmost sensitivity and thoughtfulness towards others” (Kolata, 2016).

The Learning Salon was conceived by the authors to emulate the spirit of the salons of the Enlightenment. The overarching goal of the Learning Salon emerged as bringing together scientific and philosophical disciplines investigating biological and artificial learning. This goal, combined with the interdisciplinary networks of the hosts, managed to immediately attract a returning audience of neuroscientists, psychologists, philosophers, and artificial intelligence (AI) researchers. There has been a recent revival of an appreciation for the importance of philosophy of science for the sciences (Laplane et al., 2019), and a key objective of the Salon since its beginning has been to promote different philosophical perspectives. Some of the most successful Salon sessions highlighted work by contemporary philosophers (Chirimuuta, 2015; van Rooij and Baggio, 2021; Zurn, 2021).

Although the Salon grew out of the need for online meetings in the setting of the coronavirus disease 2019 (COVID-19) pandemic, it took a form that distinguished it from other online meetings. Notably, the Learning Salon reversed the ratio between time allotted for formal presentation and questions: 15–20 min for a talk and then about 2 h for questions and long-format conversation. Long-format discussion is no longer a part of typical scientific discourse but is impor-

tant in that it provides an epistemological journey toward understanding, with no necessity for agreement or conclusion. The length of the discussion unearths insights, connections, and disagreements that are less apparent in shorter formats.

Another difference is in making space for those who are usually less likely to ask questions during regular talks, by deliberate invitation and curation. The team encourages students and non-experts to ask questions in the chat during the talk, addressed by Salon hosts and the offscreen team. During the Q & A, the hosts promote diversity with respect to both representation and expertise, enabling students, postdocs, junior faculty, and non-academics from around the world to feel like equal partners in the proceedings and to show that heated debate need not inevitably slide into *ad hominem* attacks. As such, the Salon honors a practical commitment to the game of “giving and asking for reasons,” which has its philosophical roots in the works of Wittgenstein, c.f. “Philosophical investigations” (Wittgenstein and Anscombe, 1997), Brandom, c.f. “Articulating Reasons” (Brandom, 2000), and Habermas, c.f. “Theory of communicative action” (Habermas, 1991), and a commitment to rational, scientific, and philosophical practices of critical inquiry.

Understanding together

The Salon team believes that it should be possible in science to approximate what the philosopher Jürgen Habermas calls

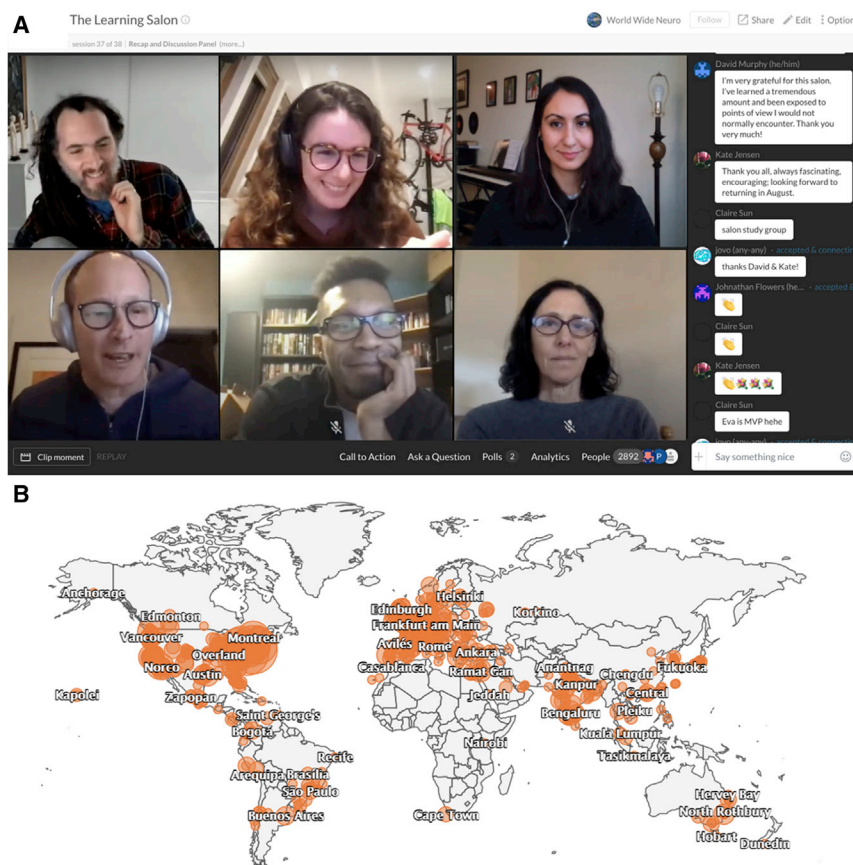


Figure 1. The Learning Salon

(A) Screenshot of the Learning Salon. Top (left to right): Joshua Vogelstein, Kim Stachenfeld, Ida Momennejad. Bottom (left to right): John Krakauer, Jonathan Flowers, Melanie Mitchell.

(B) International demographics. An advantage of an exclusively virtual event is the ability to have an international audience and being able to track the demographics. Nearly half (48.3%) of the audience tuned in from the United States. Because of our regular 4 p.m. EST time, the majority of non-American audiences are from the United Kingdom (17.8%), Canada (9.51%), and Europe (predominantly Germany with 5.78% followed by the Netherlands, France, Spain, and Portugal). In spite of the time difference, 3.86% of the audience tuned in from India and 1.17% from Australia. Demographics were included under "Other Countries" if the percentage viewership from that country was <1% for graph legibility. To compensate for viewers where this time zone was inconvenient, recordings for each session were available offline on the Crowdcast website as well as the Learning Salon YouTube channel (with a total of 11,532 views).

ideal speech situation: where competent participants take part in discourse by being allowed to introduce assertions, question any assertions with reason and evidence, and express their needs and attitudes without hesitation—without being prevented by psychological or physical coercion. While the focus of Habermas's notion was consensus, the Salon's unique priority and focus is *understanding*. In other words, the Salon hopes to foster ideal speech situations toward a *critical understanding* of interdisciplinary and multidisciplinary approaches to problems of common interest, i.e., clarity on what the scientific assertions, evidence, and

reasons are, without the pressure of necessarily arriving at a final conceptual consensus or agreement. To this end, the Salon holds space for the range of affects and emotions—often inhibited in traditional talk settings—that participants may display in their dialogical and phenomenological journey toward understanding together.

The Salon in numbers

The first Salon took place on September 4, 2020, at its allotted time slot every Friday at 4 p.m. EST. The inaugural guest was Konrad Kording to signal that the Salon had been inspired by a Neuromatch

conference in 2020. There have been 36 episodes so far. The three hosts with interdisciplinary backgrounds in psychology, neuroscience, philosophy, biomedical engineering, and machine learning are Drs. Ida Momennejad, John Krakauer, and Joshua T. Vogelstein. Claire Sun and Eva Yezerets, grad students, provide offline technical support, and Dr. Kanaka Rajan and Dr. Brad Wyble help answer questions in the chat.

The format is roughly as follows: Ida welcomes everyone and reiterates the participatory and inclusive ethos of the Salon, then a host introduces the guest speaker, highlighting what they are known for, what they like to do when not working, and their academic relationships to the hosts rather than just a list of credentials. The speaker typically presents for about 15 min followed by questions by the three hosts, which usually takes about an hour. At this point, participants with the most up-voted questions in the chat are invited on screen or have their question read out by one of the hosts and discussed. The whole process is quite informal, and if any of the Learning Salon team sees interesting comments or dialogs going on in the chat, then the chatters are often invited in. Impromptu special guest appearances also happen (Figure 1).

Because of the cross-disciplinary intent of the Salon, we have invited speakers (32 thus far) from a variety of disciplines. The majority of speakers have been researchers across neuroscience, psychology, and cognitive science (65.6%). Nearly a quarter of speakers have been computer scientists (21.8%) and 6% philosophers. Nearly half the speakers identified as women (43.8%). This is in line with our goal of having equal gender representation across speakers. However, only 15.6% were people of color, an area of improvement for future iterations.

The Learning Salon has 2,920 registered participants as of August 13, 2021. The average length of the Crowdcast session is 2 h and 20 min, and the average number of Crowdcast live viewers per session is 222. The sessions are available for viewing on Crowdcast (<https://www.crowdcast.io/e/learningsalon>) and on YouTube. The average number of YouTube views per session is 311, and while the total number of replays are unknown,

Crowdcast reports that 1,677 participants replayed at least one session.

Lessons learned from the Salon

The combination of the online format, extended time for questions, real-time community chat, and Salon ethos had a number of expected and unexpected favorable consequences.

Horizontal over vertical

Academia is a hierarchy. Scaling the pyramid from graduate student to postdoc to faculty to full professor appears ever more daunting, and as a result, the temptation to keep one's head down and play the metrics game has only increased. That said, there appears to be a new galaxy forming, a rebellion against the empire.

One can see this, for example, with the flourishing of scientific Twitter, the ongoing innovations in an open access journal run by scientists, and the rise of preprint servers such as bioRxiv. We believe that the Learning Salon is part of this new galaxy and that it has succeeded in promoting an ethos of horizontality and participation. For example, in multiple occasions, people who may have considered themselves too junior to engage in opinionated and prolonged discussion with senior luminaries nevertheless did so, either when invited into the online room or in the chat. The unboundedness of the time allotted led to noticeable changes in the conversational climate over the course of the evening, with people becoming increasingly chatty and relaxed and showing a willingness to express spontaneous thoughts and construct arguments on the fly. The impression overall was that people in science have been starved of the opportunity to express doubts, to discuss them in a relaxed and low-stakes setting, and to admit to not understanding certain things—or to just *get into it*.

The chat

The vertical chat box on the side of the main screen became a phenomenon unto itself. Initially, it was closely observed and curated by the behind-the-scenes Salon team, and all members of the team contributed to it throughout the session. A practice that emerged organically and immediately was that as papers and books were mentioned by the guests or hosts, links to them would appear in the chat,

along with other ones that the audience considered pertinent. This led to the audience sharing, comparing, and critically discussing relevant literature from their fields. This spontaneous intellectual cross-pollination in the chat was not anticipated but very much welcomed. The Salon team collects these references and keeps a publicly accessible log of the references from each event on the main website (<https://www.learningsalon.ai/references>).

Diversity

The Salon team was determined to promote diversity with respect to gender, underrepresented minority (URM) status, and LGBTQ+. Here was an opportunity for young people around the world to see that science should not be predominantly the domain of straight white males. This was encouraged through the selection of speakers and guests invited on stage. The hosts would address current issues related to equity and world events at the start of many Salons and in offscreen discussions. The Salon evolved policies to ensure that guests were prepared for the extent of critical engagement with their work, that onscreen speakers—especially URM—were not talked over, and that questions from junior researchers, students, and URM were prioritized. This encouraged all participants to think about science as a process embodied in the world rather than being apart from it. The online format and free registration also allowed people from around the world and people who otherwise are excluded for cultural and economic reasons from attending live meetings to participate. This “internationalization” and “democratization” of scientific discourse formed the north star of managing the Salon.

Interdisciplinarity

A notable success of the Salon, in our view, was that it provided people with the opportunity to hear about ideas from disciplines other than their own but nevertheless of great value to their ongoing work. For example, the importance of having some familiarity with the history and philosophy of science became increasingly apparent as the Salon progressed.

The “second-person” perspective

Approximately 2 h in, toward the end of the Salon, a new sense of understanding and discovery emerges. Having had sufficient time to mull over problems from the

perspective of participants in the discussion, “second persons,” new ideas and insights are born. This emergent end-of-the-Salon state is almost mystical and quite unlike other modes of understanding. It is as if each participant's epistemic access to the topic has been augmented by those of other participants in the discussion. This endeavor of thinking together, of bringing sustained attention to a set of recurring ideas over hours and weeks, creates a sense of participating in a collective mind. This participatory mode of knowing is close to the notion of “knowledge by presence” in Islamic and Persian philosophy of the past millennia—at least since the 10th century. Here, knowing is a mode of being; to exist and to know are identical (Jahanbegloo, 2004) and tied to a notion of the emergence of modes of knowing in the presence of certain objects, animals, or persons. Even contemporary analytic philosophers have argued for the non-reducibility of the second-person perspective (Pauen, 2012), which is closely related to the notions described here.

Notable recurring questions

Certain questions recurred and evolved across the sessions. (1) The idea of intelligence itself, specifically whether human intelligence differs in kind or just degree from non-human animal and machine forms of intelligence. Crucially, what does artificial general intelligence (AGI) imply beyond a laundry list of requirements? (2) To what degree should we be functionalists versus neural mechanists about intelligence and cognition? (3) Are psychologists, systems neuroscientists, and AI researchers asking the same questions about intelligence and cognition? Or are they engaged in quite different projects that do not all involve emulation of either common sense or AGI? (4) How should we integrate evolutionary, comparative, and AI approaches with research on intelligence and AGI? (5) What are mental representations and computations, and do they need to be invoked at all for cognition? These questions (and others) were always present either overtly or implicitly throughout the sessions. They led to further discussions on how different fields—neuroscience, cognitive science, philosophy, AI—and different levels of analysis—computational/behavioral, algorithmic, and implementational—will work together to bridge the gap

between biological and artificial intelligence. The regular attendees kept the recurring questions alive in a semblance of collective memory, so they could be revisited in the context of new ones. In our view, this continuity helped the audience to place their own work in a broader intellectual and philosophical context. We also hope that the ongoing conversations about these foundational issues will enrich everyone's work and promote new collaborations.

Testimonials about the Learning Salon

"The Learning Salon is a treat. There is a real attempt to build ideas into understanding. Ida, John, and Jovo seamlessly link topics and questions together across guests and speakers, pulling out the deep questions. The online chat function is full of people providing references, links, and explanations so everyone can keep up. It really makes the most of the possibilities in the new world of online learning." —Tim Behrens

"The Learning Salon has been my intellectual highlight of the last year. Ida, John, and Jovo have created a wonderfully diverse community that together tackles the deep questions of learning and intelligence from multiple perspectives. It has been a true joy for me to have been involved in this inspiring experiment in interdisciplinary scholarship." —Melanie Mitchell

"The Learning Salon took advantage of the COVID lockdown and our social isolation to show what a true intellectual online community can be. The format was unique: a short presentation followed by long-form, opinionated yet flexible discussions, vividly enhanced by the conversations in the chat, with the moderators brilliantly weaving the two streams of dialogue together by orchestrating impromptu stage appearances from the peanut gallery. Discussions built on one another over many weeks. Kudos to all." —Adrienne Fairhall

"From the perspective of World Wide Neuro, the Learning Salon is one of our most popular series. With more than 2,500 regular subscribers, the Learning Salon really delivers on the promise of bringing neuroscience and intellectual discourse about where the field is and should be going to scientists worldwide. It's a neuroscience talk show, and it's free for anyone who is interested to join." —Tim Vogels

"It has truly been an honor to take part in such heated discussions among sophisticated minds on complex topics—kinds that are similar to faculty meetings, which are usually exclusive to the faculties who are involved. Transparency in this process is definitely a step forward to democratizing science, and in that regard, the Learning Salon has broadened the scope of my graduate study in biomedical engineering. As a data scientist, the exposure to different concepts and techniques in the context of real-world data science research has helped me set direction in my career development and has been an invaluable asset that landed me an internship at Microsoft Research." —Jong Shin, student

"I looked forward to watching the Learning Salon every week during lockdown. I loved hearing perspectives from researchers across so many different disciplines all in the same venue—it exposed me to so many topics I wouldn't have otherwise come across. I have never seen scientific ideas flowing so freely in a public venue!" —Benjamin Pedigo, student

"Unlike traditional panel presentations, the Learning Salon placed a focus on the collaborative development of ideas across disciplines. While there were disagreements, about methodology, terminology, and the implications of research, these disagreements were always framed in the mode of collaboration

and learning rather than refutation for refutation's sake. This, combined with an interdisciplinary focus that indicated the respect that presenters and participants had for one another's disciplines, even if they were not active participants in the discipline, made the Learning Salon a truly excellent place not only to share ideas but to learn from one another." —Johnathan Flowers

"The Learning Salon was an extremely rewarding experience. The deep long discussions that evolved over each episode and over the entire series made tough interdisciplinary material very accessible. The Learning Salon approach and the virtual format were also extremely democratizing—something like this really can't play out at any individual seminar or conference, and even if it did, relatively few would be in the room to hear the conversation." —Andrew Pruszynski

Conclusions

The Learning Salon was born out of a pandemic, but it was also born out of an increasing awareness that the sciences of the mind and brain, of animal and machine intelligence, needed to literally talk to each other much more and for extended periods. The conversational oasis of the Learning Salon seems to have, at least in part, sated a worldwide hunger for precisely this kind of consilience and to have assuaged both personal and academic loneliness during a very difficult time. May it continue.

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DECLARATION OF INTERESTS

John Krakauer is on the advisory board of *Neuron*.

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