Newsletter Vereniging voor Logica

Fall Edition - November 2024

Message from the Board

Welcome to the fall edition of the <mark>VvL newsletter</mark>! As the season unfolds, we are happy to advertise upcoming events and initiatives in different cities in the Netherlands, as well as reflect on the ones that recently took place. Be sure to scroll down for insights from two of our new members and, as always, this edition's featured logic puzzle.

If you have any comments or suggestions, or if you would rather not receive this newsletter, please click here to [unsubscribe](#).

Members of the VvL

- The VvL currently has **293 members**. Compared to the last newsletter in October 2023, this is an increase of **8.12%** (and 22 members). If you meet potential new members, don't hesitate to encourage them to apply!
- We have members from many different institutions, based in Amsterdam, Utrecht, Groningen, Nijmegen, Tilburg, Eindhoven, Delft, Twente, Leiden and Rotterdam, and we even have some internationally based members.
- Among the 160 most recent membership registrations, 16% are bachelor or master students, 35% are PhD students, 35% are other academic staff, and 14% fall under logic alumni working outside an academic setting and members from the general public.

News

- **Winners VvL Master's Thesis Award 2024.** The VvL is happy to announce the winners of the VvL Master's Thesis Award 2024. Any Master's thesis with a topic in logic or in philosophy of the exact sciences (interpreted broadly, including, for example, foundations of mathematics and computer science, applications in artificial intelligence, models of cognition, causal inference, and the formal study of natural language) was eligible to be nominated for the award. The master's thesis prize committee has evaluated this year's submissions, and were extremely impressed by the breadth and quality of the submissions. The winners are:

  - **Aude Corbeel** (University of Amsterdam, Master's in Theoretical Physics). *Supervisors:* Sebastian de Haro Ollé and Erik Verlinde. *Thesis title:* "AdS/CFT Duality: Insights from Quantum Information Theory (A Conceptual Clarification)".

  - **Sterre Lutz** (Utrecht University, Master's in AI). *Supervisors:* Nima Motamed and Dragan Doder. *Thesis title:* "r-PLBP: Temporal Logic for Reasoning about Safety and Rewards of Bounded Policies under Uncertainty".

  - **Ruben Mud** (University of Groningen, Master of Mathematics). *Supervisor:* Oliver Lorscheid. *Thesis title:* "Topics in Betweenness and Enriched Categories".

  - **Valentin Müller** (University of Amsterdam, Master of Logic). *Supervisors:* Marianna Girlando and Benno van den Berg. *Thesis title:* "On the proof theory of inquisitive logic".

- **'Dick de Jongh on Intuitionistic and Provability Logics' published by Springer.** The book entitled `Dick de Jongh on Intuitionistic and Provability Logics', part of the series Outstanding Contributions to Logic, and edited by Nick Bezhanishvili, Rosalie Iemhoff and Fan Yang, has been published by Springer. The book which begins with an autobiographic note by Dick de Jongh can be dowloaded from this link. For more information, see https://link.springer.com/book/10.1007/978-3-031-47921-2 or contact Dick de Jongh at d.h.j.dejongh@uva.nl.

- **Call for board members IPN**. IPN (ICT Research Platform Nederland) unites all Dutch academic research groups that have ICT science as their core, and as such acts as a single point of contact for all matters relating to ICT innovation and its importance for our current and future society. IPN is currently looking for five new board members, to start at different times in 2025/2026. For an idea of the tasks of IPN board members, see the IPN statutes. The VvL is a member of IPN, and members of IPN can present potential board candidates before **November 28**. If you are aware of a potential candidate, or if you would like to have more information, please contact Nick Bezhanishvili (n.bezhanishvili@uva.nl).

- **Opening for PhD "VvL communications officer".** The VvL board is looking for a PhD student in the Netherlands who would like to support the VvL as 'communications officer', starting **January 2025**. Among others, the communications officer updates the website, maintains the members list and e-mail accounts, attends VvL board meetings, creates newsletters for the association, and contributes to the organization of events. If you have any questions about the position, feel free to e-mail the current communications officer, Robin Martinot, at r.a.martinot@uu.nl. In order to express your interest in the position, make sure to e-mail Nick Bezhanishvili (VvL president, at n.bezhanishvili@uva.nl).

Upcoming Events

- **VvL Essentials (November 29).** *VvL Essentials* talks are relatively high-level and broad overviews that introduce early-career logicians and logic-adjacent researchers to a field they may not be familiar with. This forms a low-threshold way to broaden their knowledge of the field at large, and encourages collaborations. Our upcoming edition is **Algebraic Logic Essentials** at the VU (Amsterdam), featuring speakers Apostolos Tzimoulis and Giuseppe Greco, and organized by Nima Motamed, Giovanni Varricchione (PhDs at UU), and Rodrigo Almeida (PhD at UvA). Save the date, and more details will follow soon!

- **VvL Annual Seminar 2024 (December 13).** The third edition of the VvL Annual Seminar will take place on **December 13** at the *University of Eindhoven*! This edition is organized by Vlasta Sikimić. The main speaker of the event will be Alexandru Baltag, after which an awards ceremony will be held for the winners of the MSc Thesis Award 2024, who will be given the opportunity to present their thesis. An optional dinner will follow the seminar. The possibility to sign up will soon arise, and we hope to see you there! See below for an impression of last year's successful edition in Utrecht.

Past Events

- **Logic at Large Lecture 2024.** The VvL Logic at Large Lectures are annual, public lectures organized for a general audience. Over the past three years, renowned international speakers have presented interesting talks, including Moshe Vardi on computer science and logic, Joel Hamkins on infinite games, and Lukasz Kaiser on OpenAI. The Logic at Large Lecture 2024 was given by **Larry Moss**, who spoke on *"A Place for Logic in the Computer Processing of Language"*. If you missed this edition but you would still like to see it, you can watch the lecture on the [VvL website](#).

- **Dutch Logic PhD Day 2024.** The Dutch Logic PhD Day is a yearly event that aims to connect PhD students in logic and related areas from all over the Netherlands. We hope that this will encourage collaborations and the exchange of ideas between PhD students, leading to a more unified Dutch research community in logic for young researchers. Besides two main speakers, the event provides the opportunity for PhD students in the Netherlands to present about their own research. The Dutch Logic PhD Day 2024 took place at VU University (Amsterdam) on June 21, and was a great success! See below for all the attendees (left, including even some participants from Belgium!), and for the organizers (right). If you are a PhD student in the Netherlands and interested in organizing DLPD 2025, don't hesitate to contact r.a.martinot@uu.nl.

"A logic can be thought of as a restricted language designed to capture a specific form of reasoning. By limiting its vocabulary and structure, we can rigorously study its properties and, in turn, understand the nature of specific kinds of reasoning.

Logicians enjoy finding ways to capture different forms of reasoning they find interesting and then exploring what properties those forms of reasoning might have. For instance, a *modal logician* might want to understand what reasoning looks like when it involves statements about possibility and necessity. This logician might then define a modal logic and ask questions like, "Is there a way to decide, using a computer program, if any given statement about necessity or possibility in this modal logic is always true?" When the answer to this particular question is "yes," we say that this logic has the property of being *decidable*.

Since I happen to be one of these people that study logic, you might wonder, "Dear Tina, what logics do *you* study, and what properties do you care about?"

"I'm glad I pretended you asked! I'm interested in logics that try to capture reasoning that involves some form of recursion, which we call *fixpoint logics*. The property that fascinates me is the *interpolation property*. I explain this next.

In logic, an interpolant can be thought as an explanation of why one statement A implies another statement B. The interpolant uses only the vocabulary that A and B share, acting as a bridge to explain the implication without adding any new ideas. If we can always find such a statement for any valid implication, we say that the logic has the property of *interpolation*.

For many logics, the question of interpolation is well understood. But for fixpoint logics, the techniques we've developed aren't as mature as we'd like. That's where my interest lies! I'm working to help the community find mathematical tools to determine whether fixpoint logics have the interpolation property or not. Hopefully one day we will have an arsenal of tools that will elucidate the relationship between fixpoints and interpolation! Having said that, I have to go back to work!"

Logic Puzzle

Solve the puzzle!

The answer will be given in the next edition of the <mark>VvL Newsletter</mark>.

264. **The Island G.** _____

A certain island G is inhabited exclusively by knights who always tell the truth and knaves who always lie. In addition, some of the knights are called "established knights" (these are knights who in a certain sense have "proved themselves') and certain knaves are called "established knaves." Now, the inhabitants of this island have formed various clubs. It is possible that an inhabitant may belong to more than one club. Given any inhabitant X and any club C, either X claims that he is a member of C or he claims that he is not a member of C.

We are given that the following four conditions, E$_1$, E$_2$, C, G, hold.

> E$_1$: The set of all established knights forms a club.
> E$_2$: The set of all established knaves forms a club.
> C (*The Complementation Condition*): Given any club

C, the set of all inhabitants of the island who are not members of C form a club of their own. (This club is called the *complement* of C and is denoted by C.)
> G (*The Gödelian Condition*): Given any club C, there is at least one inhabitant of the island who claims that he is a member of C. (Of course his claim might be false: he could be a knave.)

264a. _____

(After Gödel) (i) Prove that there is at least one unestablished knight on the island.
  (ii) prove that there is at least one unestablished knave on the island.

The solution to the puzzle in the previous newsletter is given here.

9. _____

In the first problem, the answer is "yes." For definiteness, assume there are exactly 8 million people in New York. If each inhabitant had a different number of hairs, then there would be 8 million different positive whole numbers each less than 8 million. This is impossible!

For the second problem, the answer is 518! To see this, suppose there were more than 518 inhabitants—say 520. Then there would have to be 520 distinct numbers all less than 520 and none of them equal to 518. This is impossible; there are exactly 520 distinct numbers (including zero) less than 520, hence there are only 519 numbers other than 518 which are less than 520.

Incidentally, one of the inhabitants of Podunk must be bald. Why?