Institute for Logic, Language and Computation
University of Amsterdam

Mid-term Report 2018–2020

I Introduction

We are proud to present the mid-term self-evaluation report over the years 2018–2020 by the *Institute for Logic, Language and Computation* (ILLC) of the University of Amsterdam.[1]

Who are we? The ILLC is home to a thriving community of analytic philosophers, computer scientists, logicians, mathematicians, physicists, linguists, computational linguists and cognitive scientists who share a deep passion for the use of formal methods in the interdisciplinary study of information, focusing on fundamental research that analyze the foundational principles that regulate informational processes. Building on Amsterdam's strong tradition in logic and foundational research, and combining techniques from the humanities and the exact sciences, researchers at the ILLC have succeeded to create a unique oasis for interdisciplinary studies in logic, language and computation which attracts visiting international scholars and students from all over the world.

Interdisciplinarity & our institutional setting. The ILLC is an interfaculty institute shared by the Faculty of Sciences and the Faculty of Humanities at the University of Amsterdam: interdisciplinarity is at the heart of what the ILLC is about and the balance between the two involved academic cultures and their institutions is of crucial importance. E.g., the last years have seen an unprecedented increase in the importance of research in and about artificial intelligence (AI): the ILLC community is convinced that this development will require a close collaboration between the humanities and the sciences and that ILLC is uniquely positioned to play an important role as an interdisciplinary link. The profound effects that current AI research will have on our society requires the holistic view of the humanities as well as the problem-solving skills of the sciences and will involve discussions of the broader world of public communication, societal debate, and science policy. The researchers at the ILLC are keen to play their part in these discussions.

The interfaculty nature of the ILLC means that it is closely linked with research institutes and teaching activities in both faculties such as the *Korteweg-de Vries Instituut voor Wiskunde* (KdVI), the *Instituut voor Informatica* (IvI), the *Amsterdam Center for Language and Communication* (ACLC), the *Afdelingen Filosofie, Literatuur- en Taalwetenschap, Kunst en Cultuur*, and *Mediastudies*. Close collaboration of the faculties in

---

[1]The report is provided by the ILLC management team and carried out as outlined in the Standard Evaluation Protocol (SEP) 2021–2027 provided by the Association of Universities (Universiteiten van Nederland), the Royal Netherlands Academy of Arts and Sciences (KNAW), and the Dutch Research Council (NWO).

the context of an interfaculty convenant that describes the role and duties of each of the faculties is central for the thriving of the ILLC.

Unity of research and higher education. At the ILLC, research and its mission in higher education are inseparable: the ILLC researchers believe in the Humboldtian ideal of unity of research and education; the graduate programmes of the ILLC, both at the Master's and the doctoral level are intimately integrated into the research vision of the institute and researchers collaborate with our postgraduate students intensively. As a consequence, postgraduate education will play a major part of this research self-evaluation report.

The main themes of this report. The ILLC has been formally evaluated by an evaluation committee in December 2018. The evaluation committee reported:

> The ILLC is an excellent Research Institute, that continues to build on an extremely successful foundation laid in the 1980s. The mission of the ILLC is to study information in its myriad forms. Its members and groups examine how information is coded and processed, using the resources from logic, computer science, and linguistics. The original strategy of the ILLC was ground-breaking and prescient, so much so that the appreciation and use of its perspectives and techniques have now expanded from the disciplines originally in focus, to include now even biology and the social sciences. The general perspective is now shared by many more researchers than in the 1980s, and its enormous variety of work is breath-taking.[2]

The committee recommended a structure reform of the ILLC that would change the old structure with generically named units *Logic & Computation*, *Logic & Language*, and *Language & Computation* to better reflect the work that is done at the institute. The re-structuring of the institute was a major task undertaken in the review period and implemented in 2021; we shall discuss the old and the new management structure in §I.1

The second major theme of the review period was the planning of the move of the ILLC to the new research building, now called **LAB42**. It was mentioned in the 2018 research evaluation as a major component of "facilitat[ing] collaborations beyond the institute": the developments since 2018 and the current situation will be central to this self-evaluation.

I.1 ILLC Management Structure: old & new

Founded in 1991 as an interfaculty institute at the University of Amsterdam, the ILLC is part of the Faculty of Science (FNWI) and the Faculty of Humanities (FGw). Each of these faculties is presided over by a Dean, which is Professor Peter van Tienderen for the Faculty of Science, and Professor Marieke de Goede for the Faculty of Humanities. While the former faculty is the administrative host of the institute, the ILLC reports to both Deans, and participates in meetings and decision-making processes in both faculties.

Old structure. The old management structure consisted of a scientific director, an institute manager, and the *Management Team* consisting of the three unit leaders of the units *Logic & Computation*, *Logic & Language*, and *Language & Computation*, the director of the doctoral programme and the director of the Master of Logic.

---

[2]Research Review, Institute for Language, Logic and Computation (sic!), University of Amsterdam, 2012–2017, p. 7.

Position		old structure	new structure
Scientific Director		Professor **Sonja Smets**	Professor **Robert van Rooij**
Institute Manager		**Jenny Batson**	**Peter van Ormondt**
Vice Director Research		—	Professor **Benedikt Löwe**
Vice Director Teaching		—	Professor **Khalil Sima'an**
Director Doctoral Programme		Dr **Floris Roelofsen**	Dr **Floris Roelofsen** (until December 2021)
			Dr **Maria Aloni** (from January 2022)
Director Master of Logic		Dr **Maria Aloni**	Dr *Paul Dekker*
LoCo	Leader	Professor **Yde Venema**	—
	Deputy	Professor Benedikt Löwe	—
MCL	Leader	—	Professor *Yde Venema*
	Deputy	—	Dr Benno van den Berg
TCS	Leader	—	Professor *Ulle Endriss*
	Deputy	—	Dr Ronald de Haan
LoLa	Leader	Professor **Robert van Rooij**	—
	Deputy	Dr Paul Dekker	—
FSPL	Leader	—	Dr *Luca Incurvati*
	Deputy	—	Dr Maria Aloni
EPS	Leader	—	Dr *Dingmar van Eck*
	Deputy	—	Professor Arianna Betti
LaCo	Leader	Professor **Khalil Sima'an**	—
	Deputy	Dr Jelle Zuidema	—
NLP&DH	Leader	—	Dr *Katia Shutova*
	Deputy	—	Dr Jelle Zuidema
LMC	Leader	—	Dr *Ashley Burgoyne*
	Deputy	—	Dr Jakub Szymanik

Figure 1: People involved in the ILLC management structure before and after the changes; members of the old *Management Team* and the new MTK are listed in boldface; additional members of the new MTG are listed in italics.

New structure. Based on the recommendation of the evaluation committee, this structure was changed: since 1 September 2021, the ILLC now has six research units, viz. *Mathematical & Computational Logic* (MCL), *Theoretical Computer Science* (TCS), *Formal Semantics & Philosophical Logic* (FSPL), *Epistemology & Philosophy of Science* (EPS), *Natural Language Processing & Digital Humanities* (NLP&DH), and *Language & Music Cognition* (LMC), and there are two tiers of the *Management Team*:

MTK. The *Management Team Klein* consisting of the *Scientific Director*, two *Vice Directors* (for Research and Teaching), and the Director of the ILLC Doctoral Programme;

MTG. The *Management Team Groot* consisting of the members of MTK together with the leaders of the six research units and the Director of the Master's programme in Logic.

According to the governance model of the University of Amsterdam, the ILLC director takes responsibility for the institute, supported by the two Vice Directors who can deputise if needed. In practice, the MTK, meeting biweekly, discusses and prepares decisions on all matters of importance to the institute. Major strategic decisions are discussed in the MTG, meeting bimonthly. Concerning its general policy, quality control and scientific developments, ILLC is advised by the Scientific Advisory Board (*Wetenschappelijke Adviesraad*), consisting of five highly esteemed international members of the research community: Valeria de Paiva, Angelika Kratzer, Hannes Leitgeb, Mark Steedman, and Michael Wooldridge, who recently replaced Moshe Vardi.

Figure 2: Artist's impression of LAB42 from the planning phase.

I.2 LAB42

The other major development of the last few years was the planning, development, and construction of the new building as well as the planning of the move of the ILLC into the new building. The planned move was discussed at the research evaluation in 2018 (at the time, the new building still had the provisional name ASP942) and listed as one of the main strategic issues of the coming years. Originally, LAB42 was planned to be the home of the two research institutes in the information sciences, the *Instituut voor Informatica* (IvI) and the ILLC; however, it turned out that the provided space in LAB42 was not sufficient to house both institutes and a compromise was found. Details are discussed in § III.2.

II Mission and strategic aims of the past years

The *ILLC Self-evaluation 2012–2017* described the strategy of the institute for the six years after the evaluation. In §7, it described the overall strategy to "creat[e] ... an environment that enhances curiosity-driven research and ... serve as a rallying point for information scientists across traditional research fields". It then listed the following concrete targets:

A. Research.

   A.1. *Explainable and Ethical AI:* "Contribute to research that combines the tools used in the main paradigms that have shaped the field of AI till today".

   A.2. *Interpretable Machine Learning for NLP:* "Contribute significantly to make NLP more transparent, accountable and reliable".

   A.3. *Cognitive Modelling:* "By working out quantitative models to analyse different cognitive processes ... [and] our participation in the Gravitation programme 'Language in Interaction'..., we will continue with increased intensity our research on interpretable models of higher-order cognition".

   A.4. *Logic, Games and Social agency:* "Work on epistemics, rational behaviour in strategic games, the mechanisms for collective decision making in social choice theory, logics for social networks and game theoretic analyses of the evolution of stable communicative conventions".

   A.5. *Quantum Information and Computation:* "Strengthen [the ILLC's] research profile in quantum information theory via the participation in QuSoft, the RPA 'Quantum Matter and Quantum Information' and the Gravitation project 'Quantum Software Consortium'.

B. Organisation.

   B.1. "Slower future growth in new permanent staff"; "More attention on optimising its daily operations of facilitating staff members' ... activities."

   B.2. "Guarantee the institute's necessary funding acquisition".

   B.3. "Move ... to the new building, ASP942".

   B.4. "Enhance the synergy in ILLC's research programmes".

   B.5. "Implement ILLC's gender diversity targets".

   B.6. "Strong ambition to substantially increase its open access output".

   B.7. "Contact nearby partner institutes to strengthen contacts with existing partners while also looking for new collaborations with industry and non-profit organisations"; "encourage ... staff members to participate in science-outreach activities".

   B.8. "Invest in its excellent PhD Programme and to maintain the current status of excellence of the MSc Logic Programme".

These strategic aims remained largely unchanged in the years discussed in this report and cover the four relevant aspects *Open Science* (e.g., B.6.), *PhD Policy and Training* (e.g., B.8.), *Academic Culture* (e.g., B.1., B.4., B.5., B.7.), and *Human Resources Policy* (e.g., B.5.).

III Strategy & strategic process

For most of the targets listed in §II, the strategic approach of the ILLC was straightforward and standard: e.g., focus in certain research areas is done by supporting the relevant researchers and considering to hire new researchers; acquisition of research funding is done by encouraging the staff members to apply for external funding; increasing open access output is done by utilising the open access deals of the University of Amsterdam.[3]

The ILLC has made an inventory of the different places where code is being hosted by ILLC researchers. In particular we try to provide a complete index of all ILLC code hosted on github. The UvA recently started hosting their own git repository and we expect staff members to start using that resource more frequently in the future as well.

These are standard strategic approaches not specific to the ILLC and do not require any elaboration.

Strategic goal	Strategy
A.1–5	Standard strategic approaches.
B.1–2	Standard strategic approaches.
B.3	New building (cf. III.2).
B.4	New structure (cf. III.1).
B.5–8	Standard strategic approaches.

As mentioned in the introduction, the two major developments were the re-organisation of the institute structure (relating to target B.4.) and the planned move to the new building, referred to as ASP942 in the old document, now called LAB42 (target B.3.). In this section, we shall give an in-depth account of the events and decisions concerning these two topics in §§III.1 and III.2, respectively. Both of these topics affect the aspects *PhD policy & training* and *Human resources policy* mediately and, first and foremost, the aspect *Academic culture*. In §III.3, we discuss other strategic instruments of the ILLC relating to some of the other goals; in §VI.1 in the appendix, we give brief descriptions of the six new research units.

III.1 New structure

As reported, the 2018 evaluation included as one of its six recommendations the re-evaluation of the programme structure which split the ILLC into the three programmes *Logic & Computation*, *Logic & Language*, and *Language & Computation*:

> The programmes should re-evaluate the adequacy of their labels to reflect the changing profiles of the staff in the programmes.[4]

The institute engaged in an intensive bottom-up process to implement this recommendation: first, based on the profiles of the ILLC researchers, descriptions of six research areas were created; all senior members of the ILLC were asked to identify their primary and possibly secondary and tertiary affiliations to these areas. After that, the senior members with the same primary affiliation discusses the precise scope, the name, and the leadership of the new unit. This process resulted in six research units:

---

[3]Current open access deals of the University of Amsterdam that allows all ILLC staff members to publish their papers as open access include the publishers Brill, Cambridge University Press, Elsevier, IOS Press, Oxford University Press, SAGE, Springer, Taylor & Francis, Walter de Gruyter, and Wiley.

[4]Research Review (cf. Footnote 2), p. 19.

Mathematical & Computational Logic (MCL),

Theoretical Computer Science (TCS),

Formal Semantics & Philosophical Logic (FSPL),

Epistemology & Philosophy of Science (EPS),

Natural Language Processing & Digital Humanities (NLP&DH), and

Language & Music Cognition (LMC).

Brief descriptions of the six research units can be found in the appendix in § VI.1; the holders of various positions in the old and the new management structure are listed in Figure 1. The change from the old to the new structure coincided with (1) Robert van Rooij succeeding Sonja Smets as director of ILLC and (2) the retirement of the institute manager Jenny Batson; her successor is Peter van Ormondt who has many years of experience in the ILLC Office.

Tasks of ILLC officers. The director is overall responsible for the institute. In the new structure the director is supported in his or her duties by two Vice Directors that are in charge of the coordination of research and teaching at the ILLC. The Vice Director Research informs the unit leaders about funding opportunities and coordinates together with the institute manager the database of planned research project applications. The Vice Director Teaching oversees the various teaching activities that the staff members of the ILLC perform for undergraduate and postgraduate programmes at the UvA, in particular on the FNWI side. The unit leaders participate in the meetings of the MTG and serve as liaison between the senior staff members of the ILLC and the management structure. They organise regular meetings of their units and are in charge of the travel and colloquium budget of the units.

Employment structure and annual performance talks. All employees of the UvA have annual performance talks (*jaargesprek*) with their line managers. The hierarchical employment structure is handled differently in the two relevant Faculties. In the Faculty of Humanities, the chair of the *capaciteitsgroep* of each employee is the line manager; for employees of the Faculty of Sciences, the ILLC decided that the unit leaders are the line managers of all senior staff in their units except for the full professors and the vice directors whose line manager is the ILLC Director.

Key Themes. The six research units are united in their common focus on the use of formal methods, including the development of theories and the design of logical systems and computational models to handle a rich variety of perspectives on information. This common ground, established by the use of different formal methods, is the core engine behind the main collaborations across ILLC's different units and makes it possible to continuously trigger new insights, to approach a problem from multiple perspectives and to keep advancing our work in Logic, Language and Computation.

In order to highlight the research trends that link the six research units, the ILLC decided to have four *Key Themes*. Once more, the decision on the list of Key Themes was a bottom-up process. The MTG first decided on criteria for Key Themes, then solicited

suggestions from all six units, and finally decided on the list of four key themes. In order to qualify as a Key Theme, a research area would need to link several different research units and be recognisable as a theme by a wider non-specialist academic public. Furthermore, for a research topic to be a Key Theme, the ILLC should be able to be(come) an important player in the field. The Key Themes are:

Humane & Responsible AI (coordinators: Aybüke Özgün, Sandro Pezzelle, Jelle Zuidema; involved units: TCS, FSPL, EPS, NLP&DH, LMC).

Social & Cognitive Modelling (coordinators: Ashley Burgoyne, Katrin Schulz, Sonja Smets; involved units: MCL, TCS, FSPL, EPS, LMC),

Reasoning & Rationality (coordinators: Ulle Endriss, Khalil Sima'an, Yde Venema; involved units: MCL, TCS, FSPL, EPS, NLP&DH, LMC);

Quantum Information (coordinators: Maris Ozols, Sonja Smets, Ronald de Wolf; involved units: MCL, EPS, TCS).

III.2 New building

In the last evaluation, it was reported that a new building was planned, then provisionally named **ASP942**, that would be the new home of the two research institutes in the information sciences:

> The top floors of the building will be reserved for the offices of the Informatics Institute and the Institute for Logic, Language and Computation of the Faculty of Science. The fourth and fifth floors will also house the AI labs of the ICAI, which is dedicated to developing AI technologies in collaborative research labs set up in partnership with the business sector, government and knowledge institutions.[5]

The building was designed by *Benthem Crouwel Architects* to be an

> accessible and transparent building where staff, students and the business community can all feel at home—a lively and inspirational environment that brings together research, teaching and value creation in the information sciences.[6]

A particular focus of the new building was supposed to be *Artificial Intelligence*, strongly represented in both of the institutes whose new home the building was planned to be. In December 2018 and January 2019, there was a Faculty consultation about the name of the new building and a vote among the members of the Faculty resulted in the new name **LAB42** with a jocular reference to Douglas Adams's *Answer to the Ultimate Question of Life, the Universe, and Everything.* Construction was started in 2019 in close communication with the institutes that were supposed to move into the new building. The planning became very concrete with floor plans and office distributions in early 2022. However, it transpired that due to the enormous growth of both of the involved institutes, it was not possible anymore to fit both institutes into the allocated space.

Various options were considered by the Management Team and discussed within the research units: fitting the entire ILLC into the limited space in LAB42 would have resulted in large numbers of senior staff sharing office space; it became very quickly clear that this was not a sustainable option. The two remaining options were

---

[5]LAB42 website of the UvA: *Ambitions & Priorities.*
[6]LAB42 website of the UvA: *Design and impression.*

(a) to give up LAB42 altogether and move the ILLC to the main Science Park building SP904 or

(b) move the research units of the ILLC that will cooperate with the Informatics Institute, in particular the AI-related research units, into LAB42 and the other research units into SP904, thereby splitting the ILLC.

The two options and their advantages and disadvantages were carefully considered and the MTG chose option (b). In order to maintain the integrity of the new research units, it was decided that three entire units would go to LAB42 and three would go to SP904. The units for LAB42 were chosen by their research proximity to AI: the units TCS, NLP&DH, and LMC will move to the new building in August 2022. It is very important to the ILLC that both locations are the home of the ILLC: while the ILLC office and the Master of Logic room will be located at SP904 for reasons of space, the ILLC director and office will have spaces in LAB42 as well. The offices in SP904 will be located closely to those of the mathematics research unit, *Korteweg-de Vries Instituut* (KdVI) in order to create synergies for the research unit MCL. Special communication rooms in LAB42 will be made available for researchers working on the Key Themes *Responsible AI* and *Quantum Information.*

III.3   Other strategic instruments

As mentioned, many of the strategic instruments of the ILLC are standard and not specific to the ILLC. In this section, we discuss two topics of particular interest for the ILLC, viz. diversity and knowledge valorisation, and the ILLC's strategic approach towards these.

Diversity.   The ILLC has created a *Diversity Committee* that deals with various issues of diversity, including cultural and gender diversity (cf. VI.8). On the one hand, the committee acts as a point of contact for ILLC with respect to diversity and inclusion policies and initiatives by UvA, FNWI and FGw. On the other hand, it takes concrete steps to promote diversity and inclusion within ILLC. The Committee represents members from ILLC at all career stages, and has planned a set of initiatives for the forthcoming years which include the Diversity Talks series, info sessions on UvA policies and guidelines, and the support of ILLC's leadership in achieving the institute's targets.

A perennially difficult issue for the ILLC is gender diversity since several of the disciplines involved, especially in the Faculty of Science, have notoriously low representation numbers of female researchers. Several strategic measures have been implements in the hiring and leadership procedures of the ILLC, such as development of career perspective plans for female members of scientific staff, scouting for female candidates both for regular hiring procedures and for special *ad personam* professorial appointments (e.g., via the Beta-plus programme), appropriate female representation in decision-making bodies, and expression of expectations to hiring committees (attention to gender bias, inclusion of female candidates in the short list, etc.).

Knowledge Valorisation.   *Knowledge valorisation* is the utilisation of knowledge gained by the research activities of the ILLC in other non-research contexts. The boundary lines between knowledge valorisation in the proper sense and outreach activities (where research results of the ILLC are presented to the general public) are sometimes not very easy to define precisely and interplay between knowledge valorisation and outreach is expected. The

ILLC has established a *Knowledge Valorisation Committee* which considers and develops a knowledge valorisation strategy for the ILLC, monitors and supports knowledge valorisation activities. It liaises with the ILLC Manager as a contact person to the Management Team (who was the former ILLC valorisation officer). Cf. § VI.9 in the appendix for the membership and mandate of the committee.

IV Accomplishments & Evidence

In § III, we explained what steps the ILLC has taken towards the strategic goals and targets outlined in the *ILLC Self-evaluation 2012–2017*. In some cases, concrete data (e.g., hiring data, publication data, or funding acquisition data) is needed as evidence beyond the narrative given in § III. This report contains a comprehensive appendix with all relevant data; in this section, we shall link our claims to the relevant parts of the appendix.

Preliminary remark on the use of quantitative data. The use of quantitative data, in particular bibliometric data, for the evaluation of research quality is highly questionable. In general, studies have shown that bibliometry is a very unreliable indicator of research quality in many if not most of the disciplines relevant for the ILLC; in particular, the typical bibliometric measures used (e.g., citation index or H-index) do not measure research quality. On the other hand, many attempts to replace these indicators by discipline-specific alternative indicators have proved to be difficult if not impossible. Moreover, the interdisciplinary nature of the ILLC where disciplines with a book publishing culture, disciplines with a journal publishing culture, and disciplines with a conference paper publishing culture meet, makes it impossible to have a uniform quantitative measure. In the Appendix, we shall report on publication numbers without citation numbers and refrain from interpreting these figures.

Research accomplishments. The level of accomplishments in research are best witnessed by the content of publications, the interconnection of the institute to the wider research community by invitation to keynote talks at conferences and workshops, prizes and accolades for ILLC researchers and research students, the recognition of ILLC researcher by invitations to editorial boards of respected journals as well as management board of international research associations, the high quality of the ILLC doctoral dissertations, the involvement in international research events, nationally and internationally funded research collaborations. Data on publications and editorships can be found in appendices in § VI.4 and § VI.5.

Particularly prominent highlights in terms of national or international recognition of our researchers in the years since the last evaluation are the election of Harry Buhrman and Henkjan Honing to the *Royal Netherlands Academy of Arts and Sciences*, the election of Maria Aloni and Sonja Smets to the *Academia Europaea*, the elections of Benedikt Löwe, Sonja Smets, and Johan van Benthem to the *Académie Internationale de Philosophie des Sciences*, and the decoration of Jos Baeten as *Officier van de Orde van Oranje-Nassau*.

In the following, we shall briefly comment on each of the thirteen targets listed in § 7 of the 2017 Self-evaluation.

We note that the Key Themes that were finally decided on differ slightly in their composition from the five research target listed as A.1 to A.5 in the previous self evaluation report. The following table provides the translation between the research targets and the Key Themes. The new Key Theme *Reasoning & Rationality* connects research that relates to formal representation of reasoning processes and their evaluation that permeates all six research units.

Research target	Key Theme
A.1 *Explainable and Ethical AI*	*Humane & Responsible AI*
A.2 *Interpretable Machine Learning for NLP*	*Humane & Responsible AI*
A.3 *Cognitive Modelling*	*Social & Cognitive Modelling*
A.4 *Logic, Games and Social Agency*	*Social & Cognitive Modelling*
A.5 *Quantum Information and Computation*	*Quantum Information*

We report on accomplishments and evidence according to Key Themes rather than the research targets.

Key Theme *Humane & Responsible AI*. Targets A.1 and A.2 as formulated in the previous self evaluation is captured by the Key Theme *Responsible & Explainable AI*, connecting five of our six research units.

The area of *Responsible & Explainable AI* has become increasingly important for society and the ILLC in recent years, as the importance for reflection on AI techniques has moved to the centre of discussions about AI. It includes research on interpretable machine learning in NLP.

In this field, we have been able to hire Gregor Behnke (UD, FNWI), Aybüke Özgün (UD, FGw), Sandro Pezzelle (UD, FNWI), Katrin Schulz[7] (UD, FNWI), Wilker Aziz (UD, FNWI). The high quality of our researchers was rewarded with grants such as two H2020 Erasmus+ Grants (Blanke), an NWO Open Competition Grant (Schulz), a Dutch Research Agenda grant (Zuidema), and a grant within the H2020 R&I framework (Aziz).

Key Theme *Social & Cognitive Modelling*. The Key Theme *Social & Cognitive Modelling* also connects five of our six research units, ranging from applications of dynamic logic via computational social choice theory to applications of language technology.

In this field, we have been able to hire Marieke Schouwstra (UD, FGw) and Karolina Krzyzanowska (UD, FGw). The research in this field was rewarded with high-profile grants such as an ERC Consolidator Grant (Fernández) and an NWO Open Competition Grant (van Rooij).

Particularly relevant for the visibility of our research for the outside world were Henkjan Honing's new books *The Origins of Musicality* (2018), *Aap slaat maat. Op zoek naar de oorsprong van muzikaliteit bij mens en dier* (2018) and its English translation *The Evolving Animal Orchestra: In Search of What Makes Us Musical* (2019).

Key Theme *Reasoning & Rationality*. The Key Theme *Reasoning & Rationality* connects all six of our research units. In this field, we have been able to hire Malvin Gattinger (UD, FNWI) and Ronald de Haan (UD, FNWI). Two funding highlights were the NWO Veni project awarded to Ronald de Haan, and the NWO Vici project awarded to Ulle Endriss.

Key Theme *Quantum Information*. While there is a narrower reading of the term "quantum information" to refer only to information-theoretic aspects of quantum computing, we interpret the Key Theme *Quantum Information* to include all ILLC research that connects to quantum topics, i.e., both quantum computation and quantum logic. The ILLC

---

[7]Dr. Schulz was previously a member of ILLC employed at FGw.

research in these fields was awarded with research grants such as an NWO VIDI (Ozols) and a Dutch Research Agenda grant (de Haro Ollé). Unfortunately, the ILLC had to lament the loss of a very important senior staff member: Christian Schaffner was offered a professorship at the *Instituut voor Informatica* and left us; he will not be far from us and we expect research collaborations with him and his group to continue.

Target B.1.   While we expected "slower future growth" in our 2017 Self-evaluation, nevertheless the rapid developments in AI lead to major investments in additional positions, but also in the reactions of the government and the University to the major workload crisis in academia: in order to alleviate the big problems with workload in academia, various funding instruments (e.g., the *kwaliteitsgelden* and the *van Meenen gelden*) resulted in opportunities of advertising additional tenured teaching-related positions.

The years of the pandemic were hard on everyone, students, scientific staff, and support staff. The new management structure has resulted in better feedback mechanisms that allow members of the institute to be actively involved in strategic discussions and indicate issues before they result in major problems.

Target B.2.   The ILLC was successful in obtaining external funding during the last years, and continued attracting external funding. Particularly important grants acquired in the years of evaluation were NWO NWA-ORC (Zuidema, 2020), NWO Vidi (Ozols, 2019), NWO Vici (Endriss, 2018), ERC Consolidator (Fernández, 2018), three NWO Open Competition (Schulz, 2019; Van Rooij, 2019; Muskens, 2019), NWO TOP1 (Venema, 2018). Statistics and a list of grants can be found in § VI.3.4 in the appendix, in particular Table 8.[8]

Target B.3.   Target B.3 has not been reached by the time of writing of this self report and, as discussed in § III.2, will not be fully achieved: only three of the six research units will move into the new building. This partial move is expected to be completed by the time of the visit of the Scientific Advisory Board.

Target B.4.   The main strategic instrument for enhancing the synergy in ILLC's research programmes was the development of the new research structure. Due to the pandemic, any synergy-creating effects of being physically close to each other in a building were negated; this is to be monitored closely in the months to come, especially in light of the partial move to the new building.

Target B.5.   Gender diversity, in particular, remains a concern for the ILLC, as most of the disciplines represented in the ILLC struggle with issues of gender diversity (mathematics, philosophy, computer science). These issues are systemic and cannot be solved by a single institute. The gender diversity strategy outlined in § III.3 resulted in very remarkable improvements over the last few years: between the start of 2019 and now, eight new female senior staff members were hired and the gender statistics improved among the Assistant Professors, Postdocs, and PhD students (statistics and a list of the hired female senior staff members can be found in § VI.7 in the appendix). The mentioned career development

---

[8]It should perhaps be noted that since 2020 a number of larger grants were acquired as well by ILLC members, including two Vici grants.

measures for female senior staff members are likely to improve the ratio for more senior positions as well in years to come.

Target B.6. As a Dutch research institution, the University of Amsterdam is included in several high-level agreements with commercial publishers, guaranteeing that many if not most of the publications of ILLC researchers are available in open access (cf. Footnote 3). In addition to that, ILLC researchers often follow the practice of pre-publishing their papers on preprint servers, thereby giving everyone full access to the scientific content. For researchers in communities without dedicated preprint servers, the ILLC has its own publication series, the *ILLC Publications*.

Target B.7. Although we were already working with industrial and societal partners during the period 2018-2020 (such as with Booking.com), only recently we have been able to have projects awarded where there is significant cooperation with industry and other societal organisations. Most notably, in this respect, are the two grants obtained in the National Research Agenda scheme (Zuidema & de Haro Ollé). These projects have fostered a lot of collaboration with industry and other societal organisations and we intend to build on these collaborations in the future. We expect that our partial move to LAB42, our recent involvement with the Amsterdam 'AI Technology for People' program, and with international networks like ELLIS and CLAIRE, together wtih our new initiative on the topic of 'Language Sciences for Social Good', will open new collaboration opportunities as well.

Target B.8. Both the doctoral programme and the Master's programme in Logic are items of particular pride of the ILLC, producing graduates that go on to make a mark on the disciplines they work in. The procedures of these programmes, including admissions, selection, supervision, mentoring, and quality control have been developed and fine-tuned over the years and are working exceptionally well. Of course, as with all aspects of research and teaching, the pandemic and the major shifts in higher education to be expected in the coming years greatly affected these programmes.

In the last years, we established joint doctorate programme with the University of St Andrews (Scotland) and we are negotiating a joint doctorate programme with Tsinghua University (China). In order to increase the level of preparation that our local undergraduate students have for the Master's programme in Logic, a new undergraduate Minor in *Logic & Computation* has been established in 2018. This (sub)programme has been flourishing with fourteen students in its initial year (2018–19) and 28 and 24 students in 2019–20 and 2020–21, respectively.

V Future strategy

The ILLC is one of the world's major centres in the interdisciplinary research area of logic, language and computation. It is thriving, continuously innovating its research agenda without compromising its identity. As a consequence, the research portfolio of the institute is a blend of traditional areas of historical importance (such as modal logic and dynamic semantics) and new trends (such as models of cognition and data-driven learning methods). While building on this legacy of earlier pioneering work, ILLC creates the space where new ideas can constantly be tested and expanded. The recent explosion of interest in data-driven techniques in AI, together with its ethical and societal consequences, has moved some of the research areas of the ILLC centre-stage and into the spotlight of national and international science planning policy.

The future strategy of the ILLC is to stay close to the dual approach of tradition and innovation: maintain excellence in those areas for which the ILLC has built a reputation over decades (including mathematical logic and formal semantics) while also exploring new avenues of research that complement the traditional areas (such as digital humanities). It is very important for the ILLC not to be perceived as giving up on the traditional areas of strength in favour of novel research directions. Conversely, it is crucial for the ILLC to be seen as one of the two research institutes at the University of Amsterdam where research on data-driven AI is performed.

The ILLC will pursue its scientific mission by continuing to create an environment that enhances curiosity-driven research and can serve as a rallying point for information scientists across traditional research fields. In particular, the ILLC strives to build strong alliances with local, national and international organisations that share this view. The goal is not only to intensify cooperation with other academic institutions, but also to significantly extend its collaboration with industrial partners and societal organisations. Finally, an important part of the core business of the ILLC is geared towards research-oriented teaching activities within the University of Amsterdam.

SWOT Analysis. We shall close this report with a SWOT analysis for the ILLC that can be used as background information for the discussions at the meeting with the Scientific Advisory Board.

Strengths.

> S1. Productive well-known researchers, many of whom are leaders in their field and have an excellent track record in obtaining research funding.

> S2. A wide yet coherent and thriving interdisciplinary research programme within the faculties FNWI and FGw.

> S3. Fruitful local, national and international collaborations.

> S4. High-quality PhD programme with an excellent placement-record, which benefits from and contributes to an excellent research environment.

> S5. Research interwoven with teaching in a wide range of educational programmes across the university, including the international Master of Logic, the Brain and Cognition, Mathematics, Philosophy and AI programmes.

Weaknesses.

    W1. Poor gender-balance among staff.

    W2. Multi-location of the ILLC at Science Park and in the city center makes communication/collaboration harder.

Opportunities.

    O1. The future concentration of the information sciences at LAB42 opens opportunities for new collaborations between ILLC and IvI. Similarly, ILLC's participation in FGw's new *Onderzoeksgebouw* in the city center opens opportunities for collaborations with different partners in the Humanities. Both locations are expected to open new innovation and valorisation opportunities.

    O2. Well-positioned to take advantage of the new national 'sectorplan' in Humanities, with Human(e) AI as one of its focus points, via its involvement in UvA's RPA in Human(e) AI, continued participation in the 'Brain & Cognition' initiative, in the RPA 'Quantum Matter and Quantum Information' as well as in the new government-funded national quantum programme.

    O3. ILLC's international research position is strengthened via collaborations in China and the UK while new opportunities appear in the EU and USA.

Threats.

    T1. The housing situation in LAB42 will result in a split of the ILLC between two locations at Science Park.

    T2. The increasing preference of funding agencies for applied research creates opportunities in computational linguistics and digital humanities, but threatens ILLC's more theoretical research lines. The current trend of funding a smaller number of larger projects also reduces the overall success-rate of grant applications.

    T3. Currently low number of senior staff members at FGw poses problems for leadership tasks in research, supervision and management.

    T4. The differences in organisational structures between FNWI and FGw imposes an inequality in terms of career prospects and the available time for research versus teaching among staff-members employed in different faculties.

    T5. Rising number of students in the information sciences, especially in AI, requires a shift in allocation of resources.

VI Appendix

VI.1 Description of the six new research units

Mathematical and Computational Logic (MCL). The unit *Mathematical and Computational Logic* focuses on gaining a deeper understanding of the nature of information and the processes of reasoning and computation. Researchers in the unit are internationally recognized as leading figures on foundational issues in mathematics, theoretical computer science and AI. Foremost, the unit builds on a strong tradition of research in logic in the Netherlands, going back to the work of Brouwer, Heyting and Beth. While being best known for our work in intuitionistic and modal logic, we cover most of the classical areas of mathematical logic such as set theory, computability theory, category theory, proof theory and algebraic logic. In theoretical computer science, the unit is famous for its work on coalgebraic and fixpoint logics, as well as type theory and the computational content of proofs, and in AI, for its contribution to the fields of multi-agent systems, the dynamics of information and formal learning theory. Through its foundational work the unit contributes to neighboring disciplines ranging from formal epistemology, decision theory, game theory to cognitive science.

Theoretical Computer Science (TCS). In theoretical computer science, our research is characterised by a focus on fundamental questions regarding the design and analysis of algorithms.

We investigate problems motivated by applications in physics, economics, and AI. Specifically, at the interface with physics, we conduct research in quantum computing and quantum information. At the interface with economics, we are active in the fields of algorithmic game theory and computational social choice. Finally, at the interface with AI, we work on topics in knowledge representation and multiagent systems.

Transcending this diversity of research directions is a shared reliance on formal tools, including techniques originating in computational logic, complexity theory, information theory, linear algebra, combinatorics, and discrete mathematics more generally.

Formal Semantics & Philosophical Logic (FSPL). The research focus of the unit is the study, through the application of formal tools, of information transfer and communication through meaningful language use, as well as of key philosophical problems. The Unit brings together researchers who are a leading force within formal semantics and pragmatics and within philosophical logic. Researchers in this Unit investigate linguistic phenomena such as epistemic modals, conditionals, indexicals, quantiers, free choice, rejection and questions as well as philosophical concepts such as vagueness, truth, consequence and conceivability. A distinctive feature of the Unit is the plurality of methods used to pursue the research objectives. Members of the Unit draw on a variety of logical tools (different logics such as modal, many-valued, non-monotonic, supervaluationist, dynamic and inquisitive logics, using both model-theoretic and proof-theoretic approaches) and other formal tools (causal inference, game theory, computer simulations and other computational tools), and combine these tools with philosophical reflection and linguistic analysis.

Epistemology & Philosophy of Science (EPS). Researchers in this unit focus on the use of computational models and analytic methods coming from e.g., logic, probability

theory and game theory to address a number of topics in formal epistemology and in the methodology and philosophy of science broadly conceived.

Within epistemology, our team plays a leading role in the design and use of epistemic and doxastic logics, with highlights on dynamic interactive belief revision and applications of logic to opinion diffusion in social networks. The team's study of rational agency draws connections to work on multi-agent systems in AI, as well as to investigations on the theory of mind in the cognitive sciences.

Within the methodology and philosophy of science, the team focuses inter alia on scientific explanation, scientific modelling and (other) scientific inference strategies, and methods applied to areas such as AI, Mathematics, Quantum Physics, Cognitive Science, Life Science, Social Sciences and the Engineering Sciences. Core topics range from function modelling in the engineering sciences to models of responsible agency in philosophy of AI as well as the explanatory power of scientific theories and explanations and a logic-based analysis of quantum information.

The unit is a key player in the newly developed area of computational philosophy, conceived in two manners: the application of data-driven, computational methods from AI in the investigation of the development of scientific ideas (concept drift), in particular ideas from logic and philosophy, and methodological reflections on computational linguistics and natural language processing seen as a new research domain in the philosophy of science.

Natural Language Processing & Digital Humanities (NLP&DH). Research in the Natural Language Processing and Digital Humanities unit focuses on automated analysis, interpretation and generation of human language and their extension towards language technology as well as their application to other humanities disciplines such as history, art, music and literature. Our work encompasses a range of topics within natural language processing (NLP) and Information Retrieval, such as syntactic parsing, computational semantics and pragmatics, discourse processing, dialogue modelling, machine translation, multilingual NLP, visually grounded language, as well as applications to information access, search and recommendation. Our interdisciplinary focus, incorporating insights from linguistics, cognitive science, psychology and machine learning, gives our group's research a unique profile, having led to numerous distinctive contributions over four decades. Whilst well-known for its influential research in the areas of statistical parsing, syntax based machine translation and semantic role labeling, recently the group has pioneered methods for interpretability of neural models, graph neural networks for NLP and few-shot learning applied to NLP tasks. Besides developing NLP models, another prominent research direction focuses on the development of societally-oriented and responsible NLP technology, as well as applications in computational literary studies, digital history, computational musicology and computational social science. To this end, the group has explored how statistical and neural models can retrieve information from text to help answer questions in the humanities, ranging from history to philosophy, and aid large-scale data-driven analysis of cultural artifacts.

Language & Music Cognition (LMC). Humans exhibit two important capacities, that for language and that for music, each of which can be seen as natural, spontaneously developing sets of traits that are based on and constrained by our cognitive abilities and underlying biology. One important line of research in Language and Music Cognition focuses specifically on *musicality*: identifying the cognitive traits that give rise to our ability to appreciate music. The unit explores the learnability and *evolution of language*, in particular

how our propensity to use complex expressions to convey complex meanings came about. *Complexity* itself is a priority as a means of understanding core cognitive abilities such as language learning, comprehension, or reasoning. Other work explores the cognitive boundaries between language and music, for example, delineating the conditions under which the *speech-to-song* illusion can occur. *Machine learning and representations* are key to several unit member's methodologies, for example, measuring the characteristics of 'catchy' music, modelling visually grounded language use, or explaining linguistic universals. The group works with diverse and multimodal data, both symbolic and sub-symbolic, correlational and experimental, audio/video and text.

VI.2   Research staff

VI.2.1   Research Staff: Institute Level

Research staff at institute level		2018	2019	2020
Scientific staff	FGw	9.21	9.4	10.6
	FNWI	13.7	15.4	16.6
	ILLC	22.9	24.8	27.2
Postdocs	FGw	10.5	10.8	9.6
	FNWI	14.6	10.3	10.7
	ILLC	25.2	21.1	20.4
PhD Candidates	FGw	10.9	12.7	12.7
	FNWI	24.2	28.9	30.1
	ILLC	35.2	41.6	42.8
Total research staff		83.2	87.5	90.1
Visiting fellows	FGw	0	0.3	0
	FNWI	1.7	1.0	1.1
	ILLC	1.7	1.3	1.1
Support staff	ILLC	11.7	11.2	19.0
Total staff		96.6	100	110.2

Table 1: Research staff overview

In Table 1, we only list the research fte of research staff, i.e., the percentage of their contracts dedicated to research. The exception to this rule is the line *Support staff* in which we list the members of the ILLC Office and the research assistants, the latter funded by various research projects, with their full fte.

VI.2.2   Research Staff: Per Programme

Programme		2018	2019	2020
Logic and Language	Scientific Staff	8	8.5	9.7
	Postdocs	11.5	12.5	12.0
	PhD candidates	13.1	12.8	11.3
	Total LoLa	32.6	33.8	32.9
Logic and Computation	Scientific Staff	8.2	8.8	9.8
	Postdocs	4.8	3.1	3.5
	PhD candidates	13.6	17.3	19.8
	Total LoCo	26.6	29.2	33.0
Language and Computation	Scientific Staff	6.7	7.5	7.7
	Postdocs	8.9	5.5	5.0
	PhD candidates	8.4	11.6	11.7
	Total LaCo	24.0	24.6	24.4
ILLC Total Research		83.2	87.5	90.4

Table 2: Research staff per programme

VI.3   Financing

VI.3.1   Funding and Expenditure: Institute Level

	2018		2019		2020	
Funding	*fte*	%	*fte*	%	*fte*	%
Direct funding	25.7	30%	25.9	30%	26.8	30%
Research grants	36.8	44%	33.3	39%	32.2	37%
Contract Research	13.4	16%	19.4	23%	22.7	26%
Other	8.6	10%	7.5	8%	5.2	6%
Total	**84.5**		**86.2**		**87.0**	
Expenditure	**k€**	%	**k€**	%	**k€**	%
Personnel costs	5,901	69%	6,277	69%	6,879	70%
Other	2,690	31%	2,839	31%	2,930	30%
Total	**8,590**		**9,115**		**9,909**	

Table 3: Funding ILLC

VI.3.2 Funding and Expenditure: Per Faculty

Funding institute level		2018 fte	2018 %	2019 fte	2019 %	2020 fte	2020 %
Direct Funding	FGw	8.4	33 %	8.4	32%	9.2	34%
	FNWI	17.3	67%	17.5	68%	17.6	66%
	ILLC	**36.8**	**30%**	**33.3**	**30%**	**32.2**	**31%**
Research grants	FGw	11.9	32%	10.6	32%	12.0	37%
	FNWI	24.9	68%	22.7	68%	20.2	63%
	ILLC	**36.8**	**44%**	**33.3**	**39%**	**32.2**	**37%**
Contract research	FGw	9.3	70%	13.0	67%	12.1	53%
	FNWI	4.0	30%	6.5	33%	10.6	47%
	ILLC	**13.4**	**16%**	**19.4**	**23%**	**22.8**	**26%**
Other	FGw	2.0	23%	1.5	19%	0.2	4%
	FNWI	6.7	77%	6.1	81%	5.9	96%
	ILLC	**8.6**	**10%**	**7.5**	**9%**	**5.2%**	**6%**
Total	FGw	31.2	37%	33.4	39%	33.5	39%
	FNWI	52.9	63%	52.7	61%	53.4	61%
	ILLC	**84.5**		**86.2**		**87.0**	
Expenditure		k€	%	k€	%	k€	%
Personnel costs	FGw	1,977	33%	2,412	38%	2,677	39%
	FNWI	3,934	67%	3,865	62%	4,201	61%
	ILLC	**5,899**		**6,275**		**6,877**	
Other	FGw	1,471	55%	1,567	55%	1,618	55%
	FNWI	1,212	45%	1,272	45%	1,312	45%
	ILLC	**2,690**		**2,839**		**2,930**	
Total	FGw	3,437	40%	3,978	44%	4,265	43%
	FNWI	5,153	60%	5,137	56%	5,513	57%
	ILLC	**8,590**		**9,115**		**9,808**	

Table 4: Sources of research funding per faculty

VI.3.3 Funding: Per Programme

Programme	Funding	2018	2019	2020
Logic and Language	Direct funding	7.0	6.8	7.5
	Research grants	13.9	12.5	12.8
	Contract research	9.3	12.5	12.1
	Other	3.3	2.5	1.0
	Total LoLa	**33.5**	**34.1**	**33.3**
Logic and Computation	Direct funding	12.0	11.5	11.1
	Research grants	6.2	9.6	12.9
	Contract research	3.7	2.5	2.6
	Other	5.3	5.0	3.8
	Total LoCo	**27.2**	**28.5**	**31.3**
Language and Computation	Direct funding	6.7	7.7	8.2
	Research grants	16.8	11.3	5.6
	Contract research	0	5.0	8.1
	Other	0	0	0.4
	Total LaCo	**23.8**	**23.5**	**22.4**
ILLC	Total ILLC	**84.4**	**86.2**	**87.0**

Table 5: Sources of research funding: programme level

VI.3.4 Funding: Earning Capacity

	2018		2019		2020		Total	
	k€	#	k€	#	k€	#	k€	#
Grants awarded to individuals	4030	5	1532	4	250	1	5813	10
Contract with industry	20	1	116	2	0	0	136	3
Non-personal academic grants	1733	3	2046	6	618	7	4397	16
Total	5783		3695		868		10,346	29

Table 6: Earning Capacity: Grants ILLC

		2018		2019		2020		Total	
		k€	#	k€	#	k€	#	k€	#
FGw	Grants awarded to individuals	280	2	0	0	0	0	280	2
	Contract with Industry	0	0	80	1	0	0	80	1
	Non-personal academic grants	500	6	790	2	593	6	1883	14
	Total	780	8	870	3	593	6	2,243	17
FNWI	Grants awarded to individuals	3,750	3	1,532	4	250	1	5,532	8
	Contract with Industry	20	1	36	1	0	0	56	2
	Non-personal academic grants	1,233	2	1,256	4	25	1	2,514	7
	Total	5,003	6	2,825	9	275	2	8,103	17

Table 7: Earning capacity per faculty

Applicant	Faculty	Programme	Grant	Year	Amount (€)
Aziz, W.	FNWI	LaCo	H2020-ICT	2018	500,000
Endriss, U.	FNWI	LoCo	NWO Vici Grant	2018	1,500,000
Rooij, R.A.M. van	FNWI	LoLa	UvA Interdisciplinary Grant	2018	250,000
Kamps, J.	FGW	LaCo	NWO Creative Cities	2018	500,000
Venema, Y.	FNWI	LoCo	NWO TOP1	2018	732,831
Fernández, R.	FNWI	LaCo	ERC Consolidator	2018	2,000,000
Bezhanishvili, N.	FNWI	LoCo	NWO Scientific Meetings	2019	1,400
Kamps, J.	FGW	LaCo	NWO Take-off	2019	40,000
Muskens, R.A.	FNWI	LoLa	NWO Open Competition	2019	750,000
Rooij, R.A.M. van	FNWI	LoLa	NWO Open Competition	2019	500,000
Schaffner, C.	FNWI	LoCo	NWO Visitor's Travel Grant	2019	5,000
Haan, R. de	FNWI	LoCo	NWO Veni Grant	2019	250,000
Schulz, K.	FGW	LoLa	NWO Open Competition	2019	750,000
Blanke, T.	FGW	LoLa	H2020 ICT-48-2020	2020	310,000
Blanke, T.	FGW	LoLa	H2020 Erasmus+	2020	60,480
Burgoyne, J.A.	FGW	LaCo	IXA Proof of Concept	2020	22,500
Colavizza, G.	FGW	LaCo	NWO Corona: fast-track data	2020	50,000
Colavizza, G.	FGW	LaCo	NWO Dutch Research Agenda IDG	2020	50,000
Kamps, J.	FGW	LaCo	IXA Proof of Concept	2020	100,000
Roelofsen, F.	FNWI	LoLa	ZonMw Covid-19: Societal dynamics	2020	25,000

Table 8: Grants awarded in 2018–2020

VI.4 Publications

Institute for Logic, Language and Computation	2018	2019	2020	$\sum$
Refereed journal articles	90	95	91	276
Books/monographs	2	6	6	14
Edited books	3	2	3	8
Book chapters	21	22	10	53
PhD theses	13	6	17	36
Conference papers	71	96	79	246
Publications aimed at general public	4	8	8	20
Research Programme Logic and Language				
Refereed journal articles	34	40	36	110
Books/monographs	1	1	1	3
Edited books	1	1	0	2
Book chapters	12	15	2	29
PhD theses	4	2	6	12
Conference papers	19	22	14	55
Publications aimed at general public	1	1	1	3
Research Programme Logic and Computation				
Refereed journal articles	38	40	29	107
Books/monographs	0	1	0	1
Edited books	1	0	1	2
Book chapters	4	2	2	8
PhD theses	5	3	5	13
Conference papers	21	29	31	81
Publications aimed at general public	1	1	1	3
Research Programme Language and Computation				
Refereed journal articles	17	16	22	55
Books/monographs	1	4	5	10
Edited books	1	0	2	3
Book chapters	5	4	3	12
PhD theses	4	1	6	11
Conference papers	32	52	33	117
Publications aimed at general public	2	6	6	14

Table 9: Main categories of research output[9]

VI.5 Editorships

ILLC members are have editorships at a wide variety of important journals in the fields they are active. Including the following:

---

[9]Co-authored publications are counted for every author: a co-authored publication by authors from different programmes will show up in each programme, but is only counted once at the institute level.

Artificial Intelligence

- Journal of Artificial Intelligence Research
- Artificial Intelligence Journal
- Journal of Autonomous Agents and Multiagent Systems

Logic

- Journal of Applied Logics
- Journal of Logic and Computation
- Journal of Logic, Language and Information
- Journal of Philosophical Logic
- Logical Investigations
- Logica Universalis
- Logic Journal of the IGPL
- Logic and Logical Philosophy
- Studia Logica
- Universal Logic
- Bulletin of Symbolic Logic
- Mathematical Logic Quarterly
- Logique et Analyse

Semantics

- Journal of Semantics
- Language and Computation
- Linguistics and Philosophy

Cognitive Science

- Music Perception

Philosophy

- Open Philosophy
- Philosophies
- Logic, Epistemology, and the Unity of Science
- Ratio
- Theoria
- Foundations of Science
- Synthese
- European Journal of Philosophy of Science

Natural Language Processing

- Computational Linguistics
- Transaction of the Association for Computational Linguistics

Computer Science

- SIAM Journal on Computing
- Theory of Computing
- Quantum
- Logical Methods in Computer Science
- Quantum Science and Technology
- SN Computer Science
- ACM Transactions on Computation Theory
- Computational Complexity
- Theory of Computing Systems
- Soft Computing

VI.6   Non-Dutch fraction of staff

Year	Non-Dutch	Number of nationalities
2018	63%	30
2019	64%	28
2020	66%	27
Average	64%	28

Table 10: Non-Dutch fraction of staff based on fte, including PhD, postdoc, assistant, associate and full professors

	All scientific staff	Professor	Associate Professor	Assistant Professor	Postdoc	PhD student
2018	63%	31%	61%	57%	76%	64%
2019	64%	28%	63%	56%	83%	66%
2020	66%	41%	59%	59%	86%	67%

Table 11: Non-Dutch fraction of staff by academic ranks

VI.7 Gender Diversity

	Professor		Associate Professor		Assistant Professor		Postdoc		PhD student	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
2018	11	3	10	2	15	6	26	6	28	16
2019	12	3	12	2	19	5	24	7	27	18
2020	12	3	12	2	17	7	20	11	26	21

Table 12: Gender diversity ILLC Staff ("PhD student" only counts students employed by the UvA/ILLC)

Starting date	Name Researcher	Faculty	Position
15-02-2018	Dr. Ekatarina Shutova	FNWI	UD (now UHD)
15-01-2019	Dr. Bahareh Afshari	FNWI	UD
01-09-2020	Dr. Marieke Schouwstra	FGw	UD
01-10-2020	Dr. Aybüke Özgün	FGw	UD
01-09-2021	Dr. Gaëlle Fontaine	FNWI	Docent
01-11-2021	Dr. Karolina Krzyzanowska	FGw	UD
01-03-2022	Dr. Katrin Schulz	FNWI	UD
01-12-2022	Dr. Rebecca Reiffenhäuser	FNWI	UD

Table 13: New female senior ILLC members

VI.8 Membership of the Diversity Committee

The *Diversity Committee* currently consists of Simone Astarita, Caitlin Boonstra, Lwenn Bussière, Giovanni Colavizza, Marco Degano, Raquel Fernández, and Dean McHugh.

VI.9 Membership and mandate of the Knowledge Valorisation Committee

The *Knowledge Valorisation Committee* currently consists of Raquel Fernández (chair), Ashley Burgoyne, Balder ten Cate, and Tobias Blanke. Its mandate is (1) to consider and develop a valorisation strategy for the ILLC; (2) monitor and support valorisation activities; and (3) consider procedures according to which (1) and (2) can be done and which role the committee should take (more supervisory, more proactive).