The PLURILOG project ('Pluralizing Logic') proposes to study logic as a 'boundary object', i.e. logic as a structure, a disposition, a skill, a norm and as a discipline, understood in a variety of social, cultural and political settings, throughout history and within modern societies. This object is approached from an interdisciplinary and intercultural perspective, within a global history of logic; it offers a robust reflection about the notion of logical pluralism. It aims at highlighting the history of the progressive extension of the uses of logic, as well as to contextualize the idea of the naturalness of logic and its normative role within a long history and a variety of fields.

One major target is the history of the concept of natural logic, the topic of the international workshop 'The History of the Concept Natural Logic: Interdisciplinary Approaches'. The concept of natural logic has a long history we are only beginning to unravel. The idea of a natural logic (*logica naturalis*) emerged in the thirteenth century, in contrast to 'artificial logic' (the discipline/science of logic), with already quite different interpretations. It belonged to the standard topics addressed at the beginning of logical textbooks up to the early modern and modern eras, sometimes under vernacular names ('common sense', 'sens commun', 'bon sens', 'Gesunde Vernuft') and was still being discussed by Kant and Hegel. The concept of natural logic continued to be instrumental until today, although under different guises, such as, for example, the concepts of 'mental logic' or 'proto-logic'.

The wide application of natural logic and its often unseen impact call for an approach beyond the usual resources of the history of logic to include diverse disciplines and fields of reflection. Relevant fields include history, philosophy, literature, social sciences, legal reasoning and its history, sciences of education, the history of empires and postcolonial studies, the history of the notion of academic disciplines (and of interdisciplinarity), psychology, cognitive sciences, and mathematics (in relation to logic). After the advent of mathematical logic, the concept of 'natural logic' has enjoyed a new life, from the mid 20th century on, this time defined as the logic of natural languages, as opposed to formal logic. The 2024 workshop is the first of a series of events dedicated to the topic.

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INTERNATIONAL WORKSHOP

PROJECT 'PLURALIZING LOGIC'

'The History of the Concept of Natural Logic: Interdisciplinary Approaches'

5th and 6th of SEPTEMBER 2024
9H-18H

Convenors : Julie Brumberg-Chaumont (LEM/EPHE-PSL) et Scott L. Pratt (Université of Oregon)

LEM
UMR 8584

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International Research Project

ÉCOLE PRATIQUE des HAUTES ÉTUDES | PSL

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Salle du Conseil, Room 5

Salle du conseil

CHAIR : N. GERMANN (University of de Freiburg) **Salle du conseil**

9h15 **Julie BRUMBERG-CHAUMONT (PSL/CNRS/LEM) and Scott L. PRATT (University of Oregon)**
« Introduction »

10h15 **M. HOENEN (University of Basel) - Resp. S. ELKAYAM (De Montfort University, Leicester, UK)**

'Natural Foundations of Late Medieval Logic'?'

In my paper, I will discuss the natural foundations of logic as it was taught at the late medieval schools and universities. Its focus will be on specific logical concepts that are dependent on intuitions about the world, which are not treated in logic itself, but in other disciplines such as physics and metaphysics, or are part of what the Medievals called natural logic, the basic human capacity to observe, ponder, and argue. Examples of such concepts are the consequence, the contradiction, or the distinction between the necessary and the impossible. My question will be, what makes these concepts transparent and acceptable for the medieval mind doing logic, for example, when the schoolbooks claim that a true consequence depends on a specific relationship between two propositions. How do the Medievals make sense of this concept of relationship? What is the intuition behind its use in logic? To answer this question, I will discuss various sources, one of which will be Thomas Murner's *Chartiludium logicae* (Strasbourg 1509), in which the author illustrates the fundamental concepts of logic with the help of cards showing non-logical objects, such as flying birds or people riding horses.

Coffee Break

11h30 **J. BRUMBERG-CHAUMONT (PSL/CNRS/LEM) - Resp. J. Van Benthem (University of Amsterdam/Stanford University)**

'The Concept of *Logica Naturalis* in the Middle Ages"

The formula *'logica naturalis'* appears for the first time during the thirteenth century and it is contrasted with *'logica artificialis'* (and sometimes *'logica acquisita'*). Beyond the occurrence of the formula itself, what the concept covers is operation of projecting onto the natural functioning of human mind the structures of the discipline of (Aristotelian) logic, by then learned at school by a vast majority of the learned elites. The paper explores the history of the concept of natural logic is four directions. First, I offer a general four-fold typology of the anthropological theories of logical knowledge emerged at this period, depending on whether the intrinsically insufficient natural logic of Man needs to be perfected, repaired, artificialized or helped with the crutches of logic. Second I delineate four different approaches to the notion of natural logic, one of which being the isolated position advocated by Roger Bacon for whom natural logic is self-sufficient and artificial logic serves almost for nothing. Third, I put the emphasis on the importance

CHAIR : G.KLIMA (Fordham University) **Salle du conseil**

of the reflections on the animal practical syllogisms and unnoticed syllogisms in perception (thereby connecting with Mantovani's presentation) in the history of natural logic, beyond texts devoted on logical and epistemological discussions. Finally, I insist on problem of the relationships between natural logic and artificial logic. Even if all theories are more or less based upon the idea that artificial logic develops from natural logic, this does not mean that there is a continuity between the two of them, or that artificial logic is just the artificialization of natural logic, thereby creating technical means for operations that are already naturally logical in essence.

Lunch

14h30

M. MANTOVANI (University of Leuven) -
Resp. N. GERMANN (University of Freiburg)

'Animal Reasoning and Perceptual Inferences among the Perspectivists'

Around the mid-thirteenth century there emerged in Latin Europe a distinctive understanding of the senses, which held sway well into the early modern age. Its proponents – the so-called 'Perspectivists' – blended ideas from Aristotle, Avicenna (Ibn Sina) and, most importantly, Alhacen (Ibn al-Haytham) to produce an original account of the visual process. From Roger Bacon onwards, the Perspectivists argued that the perception of most visible features results from sophisticated perceptual inferences. A true 'vision by syllogism', as they styled it, in contrast to the non-discursive apprehension 'by naked sense' proper to colour and light. In my talk, I will consider the nature and structure of these perceptual inferences, and the century-long debate about the mental faculties to be ascribed with their performance. Its implications reveal to be as far-reaching as unexpected. Indeed, as I will show, the theory of a "vision by syllogism" ended up calling into question the traditional understanding of human vis-à-vis animal perception, and urged to rethink anew the overall logic of the senses.

15h30

L. FABRY (University of Bourgogne) -
Resp. Cl. IMBERT (ENS, Paris)

'Natural Logic in the French Social Sciences : Between the Anthropology of Knowledge and the Philosophy of Social Sciences'

In *La Pensée sauvage* (Lévi-Strauss 1962, first translated as *The Salvage Mind* in 1966, second translation as *Wild Thought* in 2021), Lévi-Strauss claims that myths and cosmologies are the products of a "concrete logic", whose specificities he analyzes by showing what distinguishes it from formal logic: the operations by which these cosmological systems are constituted do not follow rules which could be made explicit and whose rigorous application would lead to unequivocal conclusions. Concrete logic is rather presented as a

Thursday, 5th September

flexible and evolving activity of structuration which is less a matter of necessary deductions than of an inventive *bricolage*. I suggest reading these texts by asking ourselves what they teach us about the status of the analyzes that Lévi-Strauss himself proposed of different myths: do his structural analyzes also fall under this type of concrete logic? I will seek to give weight to this hypothesis, which partly goes against the hopes that Lévi-Strauss had placed in establishing the deductive reasoning of formal logic and mathematics as a model for a scientific interpretation of myths. This epistemological reading of *La Pensée sauvage* will draw upon later texts from the French-speaking philosophy of the 1990s, written by authors as Jean-Blaise Grize and Jean-Claude Passeron, who affirmed that the reasoning of the human and social sciences was rather a matter of natural logic than formal logic, and sought to draw epistemological and methodological consequences from this claim.

Coffee Break

17h

Round Table 1 : 'Natural Logic vs Artificial Logic ; Logic Naturalized'

CHAIR : S. L. PRATT, with the participation of Cl. IMBERT (ENS Paris), N. GERMANN (University of de Freiburg, Germany); G. KLIMA (Fordham University) ; Y. HALPER (Bar Ilan University), J. L. ROSIEK (University of Oregon) and the speakers of the workshop.

Friday, 6th September 2024

CHAIR : J. BRUMBERG-CHAUMONT (PSL/CNRS/LEM) Salle du conseil

9h45

S. L. PRATT (University of Oregon) -
Resp. A. HUIBAN (University of Geneva)

'Natural Logic and the Norms of Reason in 17th Century North America'

For the 17th century British settlers of New England, natural logic (or natural reason as it was sometimes named) was a crucial concept for the process of colonization. Missionary John Eliot (1604-1690), author of the first published logical textbook in North America (a bilingual textbook in English and the local Indigenous language), declared that the laws of natural reason were "indelibly written in the mind of man and nature" and could be used "to demonstrate unto Pagans the falseness of the way they are in and so to prepare a way for entertainment of the Truth." This paper will summarize a critical strategy grounded on a broad notion of natural logic understood as the principles of order necessary for purposive action, including reasoning and acts of judgment. Using this framework, the paper examines the 1683 *Catechismus Logicus* of Increase Mather (1639-1729), written for the benefit of the students (and future leaders of New England) at Harvard College. The goal of this investigation is to relate the system of order presented as natural logic by Mather to the ongoing project of colonization.

Coffee Break

11h15 **A. HUIBAN (University of Geneva) - Resp. M. HOENEN (University of Basel)**

***'Deus ad contradictionem logicam non est allegatus*: Intraprotestant Controversies on Double Truth and Natural Logic at the Beginning of the 17th Century'**

From the late 16th century, and especially in the first decades of the 17th, numerous controversies erupted within the Protestant world, particularly between Lutherans and Reformed, but also between 'orthodox' Protestantism and certain proponents of Radical Reform, such as the Socinians, concerning the status of logic in theology. These controversies were particularly lively in and around the Palatinate, a natural crossroads between Lutheran and Reformed territories, and also a pivot for intellectual exchanges within the Calvinist international, between Switzerland and the United Provinces.These controversies touched notably on the problem of double truth and the existence of a natural logic. Are logical laws absolutely constraining and universal laws, which must serve as a touchstone for the interpretation of Scripture? Should the exegete and the theologian discard any doctrine or interpretation of the Bible that seems to contradict certain natural logical laws, as may be the case with the Nicene doctrine of the Trinity or the Lutheran doctrine of consubstantiation on the Eucharist? And is God himself constrained by these laws? Based on the controversy between the Lutheran theologians Balthasar Meisner and Johann Gerhard against the Reformed philosophers and theologians Bartholomaeus Keckermann and Otto Casman, we will try to reconstruct the context of these discussions and their main intellectual positions.

Lunch

CHAIR : S. L. PRATT (University of Oregon) **Room 5**

14h15 **J. Van BENTHEM (University of Amsterdam/ Stanford University) - Resp. S. L. PRATT (University of Oregon) and G. KLIMA (Fordham University)**

'Natural Logic, Tracing Some Lines in a Modern Revival'

When logicians created their rich formal languages in the era of Boole, Frege and Peirce, the logical investigation of reasoning shifted largely to formal systems that can be developed by mathematical methods. While this brought all mathematical reasoning within the scope of logic and eventually resulted in the birth of computer science and the field of formal philosophy, uses of natural language have always remained important in practice. In particular, our daily practice contains fast efficient correct inferential 'natural logic' modules that can be charted, and that turn out to connect in interesting ways to recent findings in cognitive neuroscience. They even connect to the latest developments in the reasoning powers of large language models in Artificial Intelligence like ChatGPT.

15h15

S. ELQAYAM (De Montfort University, Leicester, UK) - Resp. M. COUNIHAN (University College Groningen)

'FourTheses on Logic in Human Thinking'

I will review four theses on the place of logic in human thinking, from the strongest to the weakest.
1. *[Some] logic is part of human cognition*. According to this view, logic provides (in Marr's terms) adequate computational and algorithmic level descriptions of human thinking; i.e. an analysis of what the system computes and how, respectively. Authors taking this stance vary on various parameters, including whether they also regard logic as an appropriate normative system, and which logic (extensional, default, probabilistic, etc.) they favour as a psychological model.

2. *Dual processing and logical intuitions*. Earlier versions of dual processing theories suggested that people think logically when they have sufficient mental resources (analytic processing), but resort to rules of thumb when not, leading to errors and fallacies (intuitive processing). A more recent development emphasises human ability to reason intuitively seemingly in conformity with classical logic. This line of work is focused on processing, implicitly accepting logic as a normative system.

3. *Psychological universals*. In this view, the main research question is which (if any) elements of logic can be found to be robust across individuals and cultures. Logic *per se* is neither appropriately normative nor descriptively adequate, but some elements underly human cognition; for example, deontic thinking. This view sees common ancestry between human cognition on the one hand, and logic as a computational and algorithmic system on the other hand.
4. *Simple heuristics*. This view rejects logic entirely as either appropriately normative or adequately descriptive.

Coffee Break

16h45

Round Table 2 'Natural Logic for Natural Languages; Mental Logic'

CHAIR: J. VAN BENTHEM, with the participation of Cl. IMBERT (ENS Paris), M. COUNIHAN (University College Groningen); G. KLIMA (Fordham University), J. L. ROSIEK (University of Oregon) and the speakers of the workshop.