Abstracts

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COMMUNICATION OF MATHEMATICAL UNDERSTANDING

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A proof can be considered as consisting of two important parts: The *guarantee* that the statement is true under the given conditions and the *explanation* (the *understanding*). The important point is the difference between checking the single steps (verification) and grasping the idea of the proof (formal versus informal). The problem of understanding does not arise in proofs only but in all aspects of mathematics in general. The important question (raised already by W. P. THURSTON in his article "On Proof and Progress in Mathematics") is, how mathematical understanding can be communicated. From a general point of view this problem lies in the domain of rhetoric. I will introduce the concept of presence and relate it to the notions of evidence and plausibility. Another issue related to 'presence' is the interplay between different levels of abstraction. I will also discuss a proposal by G.-C. ROTA that the notion of evidence should by prior to the notion of truth. Examples, of course from the history of mathematics, will be given to strenghten the arguments.

BEMERKUNGEN ZUR ZYKLOGRAPHIE IN BÖHMISCHEN LÄNDERN

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Die Zyklographie ist eine unlineare Abbildungsmethode der darstellenden Geometrie, die in böhmischen Ländern schon zu ihren "vergessen" Methoden gehört. Aber zwischen 1945–1960 wurde diese Methode an tschechischen Hochschulen vorgetragen. Mit der Zyklographie beschaftigten sich zum Beispiel diese tschechischen Mathematiker: L. SEIFERT und J. SOBOTKA, die die Werke von E. MÜLLER und W. FIEDLER inspirierten.[1]

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[1]This study forms part of a dissertation thesis on Ladislav Seifert, defended in May 2001 at Masaryk University in Brno (the Czech Republic).

THE PHILOSOPHY OF MATHEMATICS OR THE PHILOSOPHY OF MATHEMATICIANS?

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In my talk I mentioned several remarks and thoughts on the "Rahmenthema". If we follow Reuban Hersh's view of the philosophy of mathematics being "the working philosophy of the mathematician, the philosophical attitude towards his work," we can find many points of interest from the side of the philosophy of mathematics which are similar or parallel to the interests of the history of mathematics. Creative activities of mathematicians, the ways of discovery and development are important issues for both of them. In the history, there are many examples of mathematicians following various believes, or 'philosophies', guiding them in their discoveries. And today's mathematicians have not inherited only a great number of genious results to built on, but also (consciously or unconsciously, but inevitably) something from the philosophical insights and understanding of mathematics of their predecessors.

WORK IN PROGRESS ON ANCIENT WORK:

SEVERAL APPROACHES TO THE EGYPTIAN CALCULATIONS OF WORK

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Within the Egyptian problem texts three problems are concerned with calculation of work. The problem about the calculation of a shoemakers products (which has been dealt with several times in the past) will be discussed in detail. Further to my interpretation of this problem I will present my approach to the Egyptian problem texts.

Zur Geschichte und Philosophie der Kategorientheorie von Saunders MacLane und Samuel Eilenberg

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Die Kategorientheorie, in den 40er Jahren 20. Jahrhunderts erstmals formuliert, stellt heute ein wichtiges Arbeitsfeld der Mathematik dar mit zahlreichen Anwendungen in Algebra, Topologie und Logik. Von besonderem Reiz ist ihr Verhältnis zur axiomatischen Mengenlehre, da einerseits deren bekannte Grundlegungsprobleme die Kategorientheorie stark prägen, andererseits versucht wurde, kategorientheoretische Begriffe zur Grundlage der Mathematik anstelle der Mengentheorie zu machen (William Lawvere). Da mein Forschungsprojekt erst an seinem Anfang steht, werde ich mich in erster Linie mit methodischen Fragen der Thematik beschäftigen und dabei im Sinne der Tagung auch Beispiele dafür liefern, was die Philosophie der Mathematik für die Geschichte der Mathematik austragen kann.

Frühneuzeitliche Algebra bei Clavius und Stevin — Ein Vergleich

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Simon Stevin veröffentlicht 1585 in französischer Sprache *L'Arithmetique*, in welcher er eine umfassende Darstellung der Algebra seiner Zeit liefert. Zu seinen Quellen zählen neben anderen die algebraischen Arbeiten von Stifel und Nunes. Diese benutzt auch der Jesuit Clavius, dessen einflußreiche Algebra erstmals 1608 erscheint. An ausgewählten Beispielen wird die unterschiedliche Darstellung algebraischen Wissens in diesen beiden Arbeiten vorgestellt und der jeweilige Einfluß von Clavius und Stevin auf die Entwicklung von Symbolik, Zahlbegriff und Gleichungslehre untersucht.

International Contributions to British Mathematical Journals, 1800-1900

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The nineteenth century in Britain witnessed an unprecedented growth in mathematically-related journals. The study of the group of mathematicians who utilized these journals as a publication and communication platform provides insight into the development of British mathematics. In particular, the number of mathematicians from overseas who chose to publish their work in British journals gradually increased during the nineteenth century. This increase reflects the slow but steady emergence of British mathematics into the international arena.

This study considers the reasons which compelled these foreign mathematicians to contribute to British journals, the types of contributions they made, and the countries they represented. These considerations indicate how the concerted efforts of foreign and domestic mathematicians to encourage international interaction met with mixed initial success; they also display the recognition by developing centers of mathematics such as the United States of the value of British journals as a valuable publication venue.

The increase of foreign contributions to nineteenth-century British mathematical journals and the goals behind these contributions describe the increasingly international status of British mathematics.[1]

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[1]This study will appear as an article in *Mathematics Unbound: The Evolution of an International Mathematical Community, 1800-1945*, ed. Karen Hunger Parshall and Adrian C. Rice (Providence: American Mathematical Society and London: London Mathematical Society), to appear late in 2001 or in 2002.

It also forms part of my doctoral dissertation *The Development of a Publication Community: Nineteenth-Century Mathematics in British Scientific Journals* at the University of Virginia. Expected completion date 2002.

AEGIDIUS FRANCISCUS DE GOTTIGNIES (1630–1689), JESUIT, MATHEMATICIAN AND SCIENTIST

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AEGIDIUS FRANCISCUS DE GOTTIGNIES is almost completely forgotten nowadays. I claim he is worth a study, though, because in fact he is more representative of the professional mathematician of his time than the great names of the field. Moreover, in his own time his work was much appreciated.

He was born in Brussels in 1630 and received his mathematical education from the then famous Jesuit mathematicians ANDREAS TACQUET and GREGOIRE DE SAINT–VINCENT. He spent most part of his life in Rome, where he taught mathematics at the Collegio Romano. As this was the most important Jesuit school and as the Jesuits were very active in education and science, he had an key position in the scientific world of the period, mainly among the Jesuits.

The most interesting part of his work is the Logistica–method, intended to be a rival of the algebra of DESCARTES and his followers, to whose use of negative numbers he objected. His books on the topic show a great interest in didactics. The method did not survive long after his death. In his time, he was well known as a designer of (mainly) astronomical instruments. From his work it appears that he is defending his Logistica and observations with ardour, but always within the framework of what Jesuit natural science could allow.

In the talk, I discussed some of his mathematical and scientific activities and ideas and their connection to the general scientific scene of the period.

I am currently preparing a Ph.D. thesis on WILLEBRORD SNELLIUS (1580–1626), professor of mathematic at Leiden University.

"UNTIRING LABOUR OVERCOMES ALL":

THE DUTCH MATHEMATICAL SOCIETY IN EUROPEAN PERSPECTIVE

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The Netherlands, like some of the other European countries, witnessed the emergence of several "amateur mathematical societies" during the 18th and early 19th centuries. One of them, the Amsterdam Mathematical Society *Onvermoeide Arbeid Komt Alles te Boven (Untiring Labour Overcomes All)*, during the early 19th century became a national institution which embodied almost the entire Dutch mathematical community. In fact, it still exists today as the Dutch Mathematical Society.

Comparing the history of the Dutch Society to related stories in some of the other European countries, reveals a broad spectrum of Societies; each of them representing a mathematical communtity, all facing their own problems and challenges. The history of the Dutch Society is very illuminating in the sense that it shows, how a relatively small group of "non-professional" mathematicians, succeeded in setting its own standards of what good mathematics was about.[2]

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[2]For more details see

Danny J. Beckers, "Untiring labour Overcomes All" The History of the Dutch Mathematical Society in Comparison to Its Variuous Counterparts in Europe. *Historia Mathematica* **28** (1) (2001), pp. 31–47.

THE BEGINNINGS OF CZECH ANALYTIC GEOMETRY

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This contribution was concerned with the beginnings of Czech analytic geometry. The aim was to show an average graduate's knowledge of analytic geometry in the 2nd half of the 19th century and the first decade of the 20th century. As there were two types of universities at that time, there were also two types of graduates — the graduates of the Charles University and technical university graduates. Conditions at those schools were different — we therefore included a section discussing this issue. Moreover, as we do not think that an average non-native reader is familiar with history necessary for real understanding of the issues discussed we feel obliged to include the minimal amount of this too.