

$p^2 = 2q - 1$ . Hence  $p^2 + (q - 1)^2 = q^2$ ;  $(p, q - 1, q)$  is a Pythagorean triple.

After all we still don't know the answer to the problem, but it became more vivid than before.

The histories of the investigated themes go from the beginnings to our days. Naturally several theorems e.g., the following ones are presented without proofs: The method developed by Wiles led to the results: If  $n \geq 3$ , then  $X^n + Y^n = 2Z^n$  has only trivial solutions; If  $n$  is odd and  $n \geq 3$ , then  $X^n + Y^n = Z^2$  has only trivial solutions; If  $n \geq 3$ , the equation  $X^n + Y^n = Z^3$  has only trivial solutions.

One of my favourite chapter was the 10th: What Kind of Numbers is  $\sqrt{2}^{\sqrt{2}}$ ? The title reminds us of Hilbert's 7th problem, but in this chapter we find a (historical) survey on various kinds of numbers, classical results and new ones too.

At last a remark which reflects characteristic of the whole work. In my opinion I know several results about the Fibonacci numbers but Ch. 1 proved that my knowledge was only a thin piece.

After reading the book (or some parts of it) one feels that these numbers are her or his friends too.

Lajos Pintér (Szeged)

LAURENT SCHWARTZ, *A Mathematician Grappling with His Century*, VIII + 490 pages, Birkhäuser Verlag, Basel - Boston - Berlin, 2001.

"What a pleasure it is to live today!" This famous line of Ulrich von Hutten (1488-1523) expresses the feelings of a great mind who lives as a free knight in a turbulent epoch. Perhaps no outstanding mathematical talent could share that sentiment until the twentieth century. Yet the author of this book could really have chosen the words of the German bard and warrior as a motto of his highly unorthodox autobiography. Laurent Schwartz, the inventor of distributions (also known as generalized functions) and a Fields medalist, takes a look back into the troubled and dangerous history of his century, in which, like a free knight, he always fearlessly participated.

As a graduate fellow, I learned from a lecture by my professor, L. Kalmár, that natural languages are strongly and globally context-dependent. This means that for arbitrary natural numbers  $m, n$ , if the  $m$ th page of a book contains the sentence "If  $a$  is an integer prime to the positive integer  $k$ , then  $a^{\phi(k)} \equiv 1 \pmod{k}$ " then you can bet you won't find the sentence "They flung their clothes off and climbed into the huge mahogany bed" on the  $n$ th page (instead of N. Jacobson and G. Orwell, he chose an equivalently convincing example from Hungarian literature). Schwartz's literary CV contains plenty of counter-examples to Kalmár's thesis (whence it follows that linguistics is a proper science as its propositions are refutable!). To be sure, remembrances of personal life are recorded here in a Victorian-like but never dull style, while the truly exciting chapters of the book are those containing stories about how the author, "driven by an irresistible force", struggled with offices and governments (especially, of the United States and the Soviet Union). At the same time, neighboring chapters provide a gentle but exact mathematical

introduction to the story how the notion and theory of distributions has emerged and developed, with due credit to the great predecessors: Dirac, Bochner, Sobolev, Carleman, de Rham, and others.

We read on these pages stories on a long series of great mathematicians from Hadamard to Grothendieck with whom Schwartz worked, on outstanding statesmen from the young Mitterrand to Pham Van Dong whom he encountered in the course of his lifelong political activity, as well as on memorable victims from Audin (his student!) to Scharansky and Massera for whom he fought during the past half century. And when I read these pages, I couldn't help recalling the classic lines from Tennyson's *Ulysses*: "Much have I seen and known; cities of men / And manners, climates, councils, governments, / Myself not least, but honour'd of them all; / And drunk delight of battle with my peers..."

The history of mathematics and world history in the twentieth century as it was seen by a great French participant — this would be an appropriate subtitle for this book, whose Latin clarity shines through the present English translation. We find the man smiling at us from the cover page, an extremely interesting personality obsessed almost equally with mathematics, the protection of human rights, and — last and least — butterfly hunting.

Beyond the mathematical and historical lessons, he has a further one for all of us, which is crystalized in these lines written about the perilous years of his persecution: "In spite of circumstances, we preserved an incredible aptitude for happiness. Without this quality, how would humanity survive?"

(A message to the Editor: in some places names are misprinted, as e.g. Mercader (p. 116), Thibault (p. 128), Kaczmarz (p. 147), Meštrović (p. 295); finally, pumas are *Puma concolor* (p. 151), and the English title for "Le Zéro et l'Infini" is *Darkness at Naon* (p. 109)).

Béla Csákány (Szeged)

GREGORY J. CHAITIN, *The Unknowable*, IX + 122 pages, Springer, New York - Berlin - Heidelberg - London - Paris - Tokyo - Hong Kong - Barcelona - Budapest, 1999.

This is a high-level popularization of mathematical logics, devoted to Gödel-type theorems. Chapter I gives a historical overview of the topic. In Chapter II we have a description of LISP, a simple but mighty formal language for processing and evaluating (whatever) expressions. LISP is used in the rest of the book to interpret all results.

The core of the book are Chapter II-V, containing Gödel's Incompleteness Theorem, Turing's Halting Problem, and the author's own results which says that it is impossible decide whether an expression is the "best possible" out of all expressions equivalent to it.

In the remaining two chapters the author provides a survey of algorithmic information theory, and sketches his very interesting and challenging thoughts about the future of mathematics.

The exposition is clear, probably sometimes a bit too concise, the style vivid and