

## 1. Biographical and Personal Information

Donald E. Knuth, born January 10, 1938, Milwaukee, Wisconsin; U. S. citizen.  
Chinese name 高德纳 (pronounced Gāo Dénà or Ko Tokuno or Go Deoknab).  
Married to Nancy Jill Carter [高精兰] (b. July 15, 1939), June 24, 1961.  
Children: John Martin (b. July 21, 1965), Jennifer Sierra (b. December 12, 1966).

## 2. Academic History

Case Institute of Technology, September 1956–June 1960; B.S., *summa cum laude*, June, 1960; M.S. (by special vote of the faculty), June 1960.  
California Institute of Technology, September 1960–June 1963; Ph.D. in Mathematics, June 1963. Thesis: “Finite Semifields and Projective Planes.”

## 3. Employment Record

Consultant, Burroughs Corp., Pasadena, California, 1960–1968.  
Assistant Professor of Mathematics, California Institute of Technology, 1963–1966.  
Associate Professor of Mathematics, California Institute of Technology, 1966–1968.  
Professor of Computer Science, Stanford University, 1968–.  
Staff Mathematician, Institute for Defense Analyses—Communications Research Division, 1968–1969.  
Guest Professor of Mathematics, University of Oslo, 1972–1973.  
Professor of Electrical Engineering (by courtesy), Stanford University, 1977–.  
Fletcher Jones Professor of Computer Science, Stanford University, 1977–1989.  
Professor of The Art of Computer Programming, Stanford University, 1990–1992.  
Professor of The Art of Computer Programming, Emeritus, Stanford University, 1993–.  
Visiting Professor in Computer Science, University of Oxford, 2002–2006, 2011–2017.  
Honorary Distinguished Professor, Cardiff School of Computer Science and Informatics, 2011–2016.  
Theta Chi Hall of Honor, 2016–.

## 4. Professional Societies

American Guild of Organists, 1965–.  
American Mathematical Society, 1961–.  
    Committee on Composition Technology, 1978–1981.  
Association for Computing Machinery, 1959–.  
    Chairman, subcommittee on ALGOL, 1963–1964.  
    General technical achievement awards subcommittee, 1975–1979.  
    National Lecturer, 1966–1967.  
    Visiting Scientist, 1966–1967.  
Mathematical Association of America, 1959–.  
Society for Industrial and Applied Mathematics, 1965–.

## 5. Publications

(see attached list)

## 6. Patents

- 3422405 (with Roger E. Packard) Digital computers having an indirect field length operation. January 14, 1969.
- 3454929 (with Donald P. Hynes) Computer Edit System. July 8, 1969.
- 3548174 Random number generator. December 15, 1970.
- 3626167 (with LeRoy R. Guck, Lawrence G. Hanson) Scaling and number base converting method and apparatus. December 7, 1971.
- 5305118 (with Stephen N. Schiller) Methods of controlling dot size in digital halftoning with multi-cell threshold arrays. April 19, 1994. European patent 96108227.8-2202, July 17, 1996.

## 7. Principal Invited Lectures Given

- ACM National Convention, Syracuse, 1962.
- NATO Summer School, Denmark, 1967.
- Britannica Scholar, Chicago, 1968.
- International Symposium on Teaching of Programming, Newcastle-Upon-Tyne, 1970.
- International Congress of Mathematicians, Nice, 1970.
- IFIP Congress, Ljubljana, 1971.
- International Congress on Logic, Methodology, and Philosophy of Science, Bucharest, 1971.
- Mathematical Association of America, San Francisco, 1974.
- The Computer Science Lecture, Carnegie-Mellon University, 1974.
- ACM National Convention, San Diego, 1974.
- Symposium on Computational Systems, Monterrey, Mexico, 1975.
- Chaire Aisenstadt, Montréal, 1975.
- American Association for the Advancement of Science, Boston, 1976; see paper P82 below.
- Gibbs Lecture (American Mathematical Society), Atlanta, 1978; see paper P91 below.
- Gillies Lectures, University of Illinois, 1979.
- Hitchcock Professor, University of California, 1979.
- Ritt Lecturer, Columbia University, 1980.
- International Colloquium on Automata, Languages, and Programming, Epidaurus, Greece, 1985; see paper Q82 below.
- 4th SIAM Conference on Discrete Mathematics, San Francisco, 1988.
- IFIP Congress, San Francisco, 1989 (keynote address); see paper P138 below.
- Organick Memorial Lectures, University of Utah, 1990.
- Donegall Lecturer in Mathematics, Trinity College, Dublin, 1992.
- International Symposium on Teaching of Programming, Newcastle-Upon-Tyne (25th Anniversary Year), 1992.
- Weizmann Memorial Lectures, Weizmann Institute of Science, 1992.
- ACM-SIAM Symposium on Discrete Algorithms, Austin, 1993.
- ATypI Congress, San Francisco, 1994.
- Unicode Conference, San José, 1995.
- Commemorative lecture for Fiftieth Anniversary of Mathematisch Centrum, Amsterdam, 1996.
- Commemorative lecture for Kyoto Prize, Kyoto, 1996.
- SIAM Annual Meeting, Stanford, 1997.
- God and Computer Lectures, MIT, 1999.
- Pascal Lectures, University of Waterloo, 2000.
- Strachey Lecture, Oxford University, 2001.
- Pi Mu Epsilon J. Sutherland Frame Lecture, San José, 2007.
- BCS/IET Turing Lectures, 2011.
- Dan E. Christie Lectures, Bowdoin College, 2011.
- Vienna Distinguished Gödel Lecture, Vienna University of Technology, 2013.
- SIAM Annual Meeting (Von Neumann Lecture), Boston, 2016.

## 8. Editorial Boards

ACM Transactions on Algorithms, 2004–.  
Acta Informatica, 1970–.  
Advances in Mathematics, 1971–1979.  
Applied Mathematics Letters, 1987–2000.  
Communications of the ACM, 1966.  
Combinatorica, 1985–1998.  
Computers and Mathematics with Applications, 1973–2008.  
Discrete Applied Mathematics, 1979.  
Discrete and Computational Geometry, 1986–2012.  
Discrete Mathematics, 1970–1978.  
Electronic Journal of Combinatorics, 1994–2013.  
Fibonacci Quarterly, 1964–1979.  
Historia Mathematica, 1972–1979.  
Human-Computer Interaction, 1985–1995.  
IEEE Transactions on Software Engineering, 1975–1979.  
Information Processing Letters, 1970–1979.  
Japan Journal of Industrial and Applied Mathematics, 1997–.  
Journal of Algorithms, 1979–2004.  
Journal of Computer and Information Sciences, 1969–1979.  
Journal of Computer and System Sciences, 1969–2012.  
Journal of Computer Science and Technology, 1989–.  
Journal of Experimental Algorithmics, 1996–.  
Journal of Graph Algorithms and Applications, 1996–.  
Journal of Graph Theory, 1975–1979.  
Journal of Statistical Planning and Inference, 1975–1979.  
Journal of the ACM, 1964–1967.  
Mathematica Journal, 1990–.  
The Mathematical Intelligencer, 1978–1979.  
Random Structures & Algorithms, 1990–2007.  
SIAM Journal on Computing, 1973–1979.  
Software — Practice and Experience, 1979–2007.  
Structured Programming, 1989–1993; Software Concepts and Tools, 1994–2000.  
Theory of Computing, 2004–.  
Utilitas Mathematica, 1970–1972.

## 9. Honors and Awards

Member, Pi Delta Epsilon, 1958–.  
Member, Tau Beta Pi, 1958–.  
Member, Blue Key, 1959–.  
Case Honor Key, 1959.  
Member, Sigma Xi, 1960–.  
Woodrow Wilson Fellow, 1960.  
National Science Foundation Fellow, 1960.  
Grace Murray Hopper Award (first recipient), Association for Computing Machinery, 1971. (\$1000)  
John Simon Guggenheim Fellow, 1972–1973.  
Fellow, American Academy of Arts and Sciences (Class I, Section 5), 1973–.  
Alan M. Turing Award, Association for Computing Machinery, 1974. (\$1000)  
Member, National Academy of Sciences (Class III, Section 33 [renumbered later to Section 34]), 1975–.  
Lester R. Ford Award, Mathematical Association of America, 1975. (\$100, for paper P63.)  
California Institute of Technology Distinguished Alumni Award, 1978.  
National Medal of Science, 1979.  
W. Wallace McDowell Award, IEEE Computer Society, 1980. (\$1000)  
Doctor of Science, honoris causa, Case Western Reserve University, 1980.  
Distinguished Fellow, The British Computer Society, 1980.  
Priestley Award, Dickinson College, 1981. (\$1000)  
Member, National Academy of Engineering, 1981–.  
Honorary member, IEEE, 1982–.  
IEEE Computer Pioneer Award (charter recipient), 1982.  
Doctor of Science, honoris causa, Luther College, 1985.  
Doctor of Science, honoris causa, Lawrence University, 1985.  
Golden Plate Award, American Academy of Achievement, 1985.  
ACM SIGCSE Award, 1986. (\$500)  
Doctor of Science, honoris causa, Muhlenberg College, 1986.  
Doctor of Science, honoris causa, University of Pennsylvania, 1986.  
Docteur honoris causa, University of Paris–Sud (Orsay), 1986.  
ACM Software Systems Award, 1986.  
Doctor of Science, honoris causa, University of Rochester, 1986.  
Steele Prize for Expository Writing, American Mathematical Society, 1986. (\$4000)  
Doctor of Science, honoris causa, State University of New York at Stony Brook, 1987.  
The New York Academy of Sciences Award, 1987. (\$5000)  
Benjamin Franklin Medal, Franklin Institute, Philadelphia, 1988.  
Doctor of Science, honoris causa, Valparaiso University, 1988.  
Doctor of Science, honoris causa, University of Oxford, 1988.  
Doctor of Science, honoris causa, Brown University, 1988.  
Doctor of Science, honoris causa, Grinnell College, 1989.  
J. D. Warnier Prize, 1989. (\$3000)  
Gold Medal Award, Case Alumni Association, 1990.  
Doctor of Science, honoris causa, Dartmouth College, 1990.  
Doctor of Science, honoris causa, Concordia University, Montréal, 1991.  
Honorary Doctor of Technology, Royal Institute of Technology, Stockholm, 1991.  
Associé Étranger, l'Académie des Sciences, Paris, 1992–.  
Pochётный Doktor [Почётный Доктор], Saint Petersburg University, 1992.  
*Computer Language* productivity award, 1992. (for literate programming)  
Doctor of Science, honoris causa, Adelphi University, 1993.  
Utenlandsk medlem, Det Norske Videnskaps-Akademi, 1993–.  
Lester R. Ford Award, Mathematical Association of America, 1993. (\$250, for paper P137.)  
Docteur honoris causa, University of Marne-la-Vallée, 1993.

Best New Book: Computer Science, Association of American Publishers, 1994. [Awarded for *The Stanford GraphBase*.]

ACM Fellow (charter recipient), 1994.

Adelsköld Medal, Royal Swedish Academy of Sciences, 1994.

IEEE John von Neumann Medal, 1995. (\$10,000)

Harvey Prize, Technion, 1995. (\$35,000)

Doctor Scientiæ Mathematicæ, honoris causa, Masaryk University, Brno, 1996.

Memorial Medal, Mathematics and Physics Faculty, Charles University, Prague, 1996.

Cum Deo Award (charter recipient), Milwaukee Lutheran High School, 1996.

Kyoto Prize for Advanced Technology, Inamori Foundation, 1996. (¥50,000,000)

Doctor of Science, honoris causa, Duke University, 1998.

Doctor of Science, honoris causa, St. Andrews University, Scotland, 1998.

Korrespondierendes Mitglied der Mathematisch-naturwissenschaftlichen Klasse, Bayerische Akademie der Wissenschaften, 1998–.

Fellow of The Computer History Museum, 1998–.

Doctor of Science, honoris causa, Williams College, 2000.

Doctor of Letters, honoris causa, University of Waterloo, Canada, 2000.

Minor planet “(21656) Knuth” [<http://sunk1.asu.cas.cz/~asteroid/planetky/21656/eng.htm>] named in 2001.

Epitimos Didaktor [Επίτιμος Διδάκτωρ], Athens University of Economics and Business, 2001.

Doctor of Science, honoris causa, Eberhard Karls Universität Tübingen, 2001.

Doctor Philosophiæ honoris causa, Universitetet i Oslo, 2002.

Doctor honoris causa in de Wetenschappen, Universiteit Antwerpen, 2003.

Foreign member, Royal Society of London for Improving Natural Knowledge, 2003–.

Doctor of Science, honoris causa, Harvard University, 2003.

Epitimos Didaktor [Επίτιμος Διδάκτωρ], University of Macedonia, 2003.

Doctor of Science, honoris causa, Université de Montréal, 2004.

Honorary Fellow, Magdalen College, Oxford University, 2005–.

Honorary Doctor, National Academy of Sciences, Republic of Armenia, 2005.

Doktor der Wissenschaften, honoris causa, Eidgenössische Technische Hochschule Zürich, 2005.

Honorary Doctor of Letters, Concordia University Wisconsin, 2006.

Gold Commemorable Medal, State Engineering University of Armenia, 2006.

Gold medal from Yerevan State University, 2006.

Member, Pi Mu Epsilon, 2007–.

Electronic Design’s Engineering Hall of Fame, 2007.

Docteur honoris causa, University of Bordeaux 1, 2007.

Foreign member, Russian Academy of Sciences [Rossiiskarâ Akademiâ Nauk], 2008–.

SIAM Fellow (charter recipient), 2009.

Katayanagi Prize for Research Excellence, 2010 (\$10,000).

Doctor of Science, honoris causa, University of Glasgow, 2011.

ABACUS Award, Upsilon Pi Epsilon, 2011 (\$5,000).

2010 Frontiers of Knowledge Award in Information and Communication Technologies, BBVA Foundation, 2011 (€400,000).

Stanford Engineering Hero, 2011.

IET Faraday Medal, 2011.

Ausbildungs- und Beratungszentrum für Informatikunterricht Platinum Gold Medal of Eidgenössische Technische Hochschule Zürich for Computer Science and Computer Science Education, 2012.

Member, American Philosophical Society (Class 1), 2012–.

American Mathematical Society Fellow (charter recipient), 2013.

Dr. Peter Karow Award for Font Technology and Digital Typography, 12 October 2013.

Doctor of Science, honoris causa, National University of Ireland, 2015.

Honorary Member, London Mathematical Society, 2015–.

Trotter Prize in Information, Complexity, and Inference, Texas A&M University, 2018 (\$5,000).

**10. Ph.D. Students**, thesis titles, and year of graduation

- Wayne Theodore Wilner, "Declarative Semantic Definition," 1971.  
Clark Allan Crane, "Linear Lists and Priority Queues as Balanced Binary Trees," 1972.  
Isu Fang, "FOLDS, A Declarative Formal Language Definition System," 1972.  
Michael Lawrence Fredman, "Growth Properties of a Class of Recursively Defined Functions," 1972.  
Vaughan Ronald Pratt, "Shellsort and Sorting Networks," 1972.  
Richard Lee Sites, "Proving that Computer Programs Terminate Cleanly," 1974.  
Gary Don Knott, "Deletion in Binary Storage Trees," 1975.  
Edwin Hallowell Satterthwaite, Jr., "Source Language Debugging Tools," 1975.  
Robert Sedgewick, "Quicksort," 1975.  
Leonidas Ioannis Guibas, "The Analysis of Hashing Algorithms," 1976.  
Mark Robbin Brown, "The Analysis of a Practical and Nearly Optimal Priority Queue," 1977.  
Richard Eric Sweet (joint supervision with Cordell Green), "Empirical Estimates of Program Entropy," 1977.  
John Fredrick Reiser, "Analysis of Additive Random Number Generators," 1977.  
Bernard Marcel Mont-Reynaud, "Hierarchical Properties of Flows, and the Determination of Inner Loops," 1977.  
Luis Isidoro Trabb Pardo, "Set Representation and Set Intersection," 1978.  
Lyle Harold Ramshaw, "Formalizing the Analysis of Algorithms," 1979.  
Christopher John Van Wyk, "A Language for Typesetting Graphics," 1980.  
Jeffrey Scott Vitter, "Analysis of Coalesced Hashing," 1980.  
Michael Frederick Plass, "Optimal Pagination Techniques for Automatic Typesetting Systems," 1981.  
Ignacio Andres Zabala Salelles, "Interacting with Graphic Objects," 1982.  
Daniel Hill Greene, "Labelled Formal Languages and Their Uses," 1983.  
Franklin Mark Liang, "Word Hy-phen-a-tion by Com-put-er," 1983.  
Andrei Zary Broder, "Weighted Random Mappings," 1985.  
John Douglas Hobby, "Digitized Brush Trajectories," 1985.  
Scott Edward Kim, "Viewpoint: Toward a Computer for Visual Thinkers," 1987.  
Pang-Chieh Chen, "Heuristic Sampling in Backtrack Trees," 1989.  
Ramsey Wadi Haddad, "Triangularization: A Two-Processor Scheduling Problem," 1990.  
Tomás Feder, "Stable networks and product graphs," 1991.

## 11. Published biographical data (\* means photograph included)

- “What’s that about a score card? A computer’s the thing,” *Newsweek* **53**, 1 (January 5, 1959), 63.
- \**IEEE Transactions on Electronic Computers* **EC-13** (1964), 478.
- Who’s Who in Computers and Data Processing*, 1971.
- American Men and Women of Science*, beginning with 12th edition (1972).
- \**Datamation*, vol. 21, no. 1 (January 1975), 11–12.
- \**IEEE Transactions on Software Engineering* **SE-1** (1975), 3.
- Who’s Who in Computer Education and Research*, 1975.
- bit* **7** (1975), 430–433, 444–447 (Japanese); written by Makoto Arisawa.
- \**Stanford Daily*, Thursday, May 27, 1976.
- Who’s Who in America*, 40th edition (1978).
- Dictionary of International Biography* **15**, 1979.
- Leaders in Electronics*, McGraw–Hill.
- \**Men of Achievement*, 1979.
- International Who’s Who in Education*, 1980.
- Who’s Who in Technology Today*, 2nd edition (1980).
- China Computerworld*, no. 14 (July 20, 1981), p. 15; no. 15 (August 5, 1981), p. 15; no. 16 (August 20, 1981), p. 15.
- \**Campus Report*, vol. 16, no. 17 (Stanford University, January 25, 1984), 5–6; vol. 16, no. 18 (February 1, 1984), 5, 8; written by Donald Stokes.
- \**West* (San Jose Mercury News, February 19, 1984), 18–23; written by Jan C. Shaw.
- \**Discover*, vol. 9, no. 5 (Time Inc., September 1984), 74–76, 78; written by Bruce Schechter.
- \**Computer Language*, vol. 1, no. 2 (October 1984), 17–19; written by Jan C. Shaw.
- \**Cleveland*, vol. 15, no. 1 (January 1986), 106–109, 140–144; written by William Marling.
- \**Portraits of Success*, by Carolyn Caddes (Portola Valley: Tioga Press, 1986), 78–79.
- \**Notices of the American Math. Society*, vol. 34, no. 2 (February 1987), 228.
- \**Portraits in Silicon*, by Robert Slater (Cambridge, Mass.: MIT Press, 1987), 341–351.
- D. É. Knut i ego “fabrika knig”, by B. B. Pokhodzeĭ, in the Russian translation of *Mathematics for the Analysis of Algorithms* (see under Books), 114–115.
- \**Communications of the ACM* **30** (1987), 816–819; written by Karen A. Frenkel.
- \**Peninsula*, vol. 3, no. 9 (December 1988), 72–74; written by Sherry Posnick-Goodwin. Japanese translation in *Kunuuusu Sensei no Program-Ron* (see under Books), 168–174.
- \**dialog Wissenschaft* (Nixdorf Computer AG, January 1989), 6–15; interview by Norbert Ryska and Stuart E. Savory.
- Eulogy: Donald E. Knuth, by G. W. Bond, in Latin with an English paraphrase, *Bulletin of the London Mathematical Society* **21** (1989), 110–112.
- Japan Society for Software Science and Technology* **7**, 2 (April 1990), 73–77; written by Makoto Arisawa.
- \**Case Alumnus*, vol. 67, no. 8 (Spring/Summer 1990), cover and 2–7; written by William Marling.
- \**Byte*, vol. 15, no. 9 (September 1990), 282.
- \**Macworld*, vol. 8, no. 7 (July 1991), 207.
- \**The Rattle of Theta Chi*, vol. 73, no. 1 (Winter 1993), 10–11.
- Information Science Dictionary* (Iwanami, Tokyo, 1990), 181.
- \**IEEE Spectrum* **32**, 6 (June 1995), 40.
- \**Out Of Their Minds* by Dennis Shasha and Cathy Lazere (New York: Copernicus, 1995), 89–101.
- CyberTimes* (10 August 1996), <http://www.nytimes.com/web/docsroot/library/cyber/week/0810knuth> written by Steve Ditlea.
- \**Lingua Franca* **6**, 6 (September 1996), 11–13; by Rick Perlstein.
- \**Automatisering Gids* (15 Maart 1996), 9.
- \**NRC Handelsblad* (28 Maart 1996); written by Dirk van Delft.
- \**De Ingenieur* (3 Juli 1996), 27–29; written by H. M. Nieland.
- \**Application Development Trends* **3**, 10 (October 1996), 17–18; written by Elizabeth U. Harding.
- \**Computer Abstracts* **41**, 3/4 (1997), 4–6.
- Computer Software* **14**, 1 (January 1997), 83–86, by Makoto Arisawa [in Japanese].

- Shi Jie Zhu Ming Ke Xue Jia Zhuan Ji (Biographies of World Famous Scientists)*, Technology Scientists I (Beijing: Science Press, 1997), 117–125, by Dong Yunmei.
- \**Wizards and Their Wonders*, by Christopher Morgan with photographs by Louis Fabian Bachrach (New York: ACM Press, 1997), 118–119.
- Contemporary Authors* **163** (1998), 244–247.
- \**Technology Review* **102**, 5 (September/October 1999), 66–70, by Steve Ditlea.
- \**Salon.com > Technology* (16 September 1999), by Mark Wallace, <http://www.salon.com/tech/feature/1999/09/16/knuth>.
- The International Who's Who*, 64th edition, 2000.
- \**NZZ Folio* (February 2002), 35–40, written by Peter Haffner.
- Science & Spirit* **13**, 4 (July–August 2002), 13–14, by Laura Sivitz.
- \**Stanford* **35**, 3 (May–June 2006), 64–69, by Kara Platoni.
- Coders at Work* by Peter Seibel (New York: Apress, 2009), 565–601.
- \**Kvantik* No. 11 (November 2014), 18–21, by Grigori Feldman [in Russian].
- \*see also papers Q62 and Q154 listed below.



## Publications of Donald E. Knuth

### 1. Books

- The Art of Computer Programming*, Vol. 1: *Fundamental Algorithms* (Reading, Mass.: Addison–Wesley, 1968), xxii + 634 pp. Second printing, revised, July 1969.
- Second edition, completely revised, December 1973. Second printing, revised, February 1975.
- Third edition, completely revised, May 1997, originally xx + 650 pp.; xx + 652 pp. since 2011.
- Volume 1, Fascicle 1: *MMIX: A RISC Computer for the New Millennium* (Upper Saddle River, N.J.: Addison–Wesley, 2005), v + 134 pp.
- Romanian translation, by Adrian Davidoviciu, Adrian Petrescu, Smaranda Dimitriu, and Paul Zamfirescu, *Tratat de programarea calculatoarelor*, V. 1: *Algoritmi fundamentali* (Bucharest: Editura tehnică, 1974), 676 pp.
- Romanian translation of the third edition, by Mihaela Târpa, *Arta programării calculatoarelor*, V. 1: *Algoritmi fundamentali* (Bucharest: Editura Teora, 2002), 616 pp.
- Romanian translation of Volume 1, Fascicle 1, by Ioan Bledea: *MMIX: Un calculator RISC pentru noul mileniu* (Bucharest: Editura Teora, 2005), ix + 149 pp.
- Russian translation, by Galina P. Babenko and Í. M. Bařakovskii, edited by K. I. Babenko, and V. S. Štarkman, *Iskusstvo programmirovaniã dlã ÉVM*, T. 1: *Osnovnye algoritmy* (Moscow: Mir, 1976), 735 pp.
- Russian translation of the third edition, under direction of Í. V. Kozachenko, by S. G. Trigub, Í. G. Gordienko, and I. V. Krasikov, edited by S. N. Trigub, *Iskusstvo programmirovaniã*, T. 1: *Osnovnye algoritmy* (Moscow: Vil'iams, 2000), 713 pp.
- Russian translation of Volume 1, Fascicle 1, by Yu. G. Gordienko, edited by S. N. Trigub, *MMIX — RISC-komp'ioter dlã novogo tysãcheletiã* (Moscow: Vil'iams, 2007), 151 pp.
- Japanese translation, under direction of Takakazu Simauti, in two volumes: Chapter 1, by Ken Hirose, *Kihon Sampō / Kiso Gainen* (Tokyo: Saiensu-Sha, 1978), 22 + 331 pp.; Chapter 2, by Nobuo Yoneda and Katsuhiko Kakehi, *Kihon Sampō / Jōhō Kōzō* (Tokyo: Saiensu-Sha, 1978), 8 + 373 pp.
- Japanese translation of the third edition, by Takashi Aoki, Kazuhiko Kakehi, Ken-Ichi Suzuki, and Takahiro Nagao, supervised by Makoto Arisawa and Eiiti Wada (Tokyo: ASCII Corporation, 2004), xxii + 632 pp. Republished in softcover (Tokyo: ASCII DWANGO, 2015).
- Japanese translation of Volume 1, Fascicle 1, by Takashi Aoki, supervised by Makoto Arisawa and Eiiti Wada (Tokyo: ASCII Corporation, 2006), vii + 134 pp.
- Chinese translation, by Guan JiWen and Su Yunlin, *Ji Suan Ji Cheng Xu She Ji Ji Qiao*, 1. Juan: *Ji Ben Suan Fa* (Beijing: Defense Industry Publishing Co., 1980), 14 + 573 pp.
- Chinese translation of the third edition, by Su YunLin, *Jisuanji Chengxu Sheji Yishu*, 1. Juan: *Jiben Suanfa* (Beijing: National Defense Industry Press, 2002), xx + 625 pp.
- Chinese translation of the third edition, by Li Bomín, Fan Ming, and Jiang Aijun, *Jisuanji Chengxu Sheji Yishu*, 1. Juan: *Jiben Suanfa* (Beijing: Posts & Telecom Press, 2016), xv + 517 pp.
- Spanish translation, by Michel Antscherl Harlange and Joan Lluís i Biset, under direction of Ramón Puigjaner i Trepà, *El Arte de Programar Ordenadores*, V. 1: *Algoritmos Fundamentales* (Barcelona: Reverté, 1980), xxiii + 672 pp.
- Indian Student Edition, with an introduction by P. C. P. Bhatt (New Delhi: Narosa Publishing House, 1985).
- Hungarian translation, under direction of Miklós Simonovits, *A Számítógép-Programozás Művészete*, V. 1: *Alapvető Algoritmusok* (Budapest: Műszaki Könyvkiadó, 1987), 654 pp.
- Hungarian translation of Volume 1, Fascicle 1, by Péter Burcsi and Zoltán Csörnyei, under direction of Antal Iványi, *MMIX: RISC számítógép a következő évezredre* (Budapest: Antoncom Infokommunikációs, 2009), 168 pp.
- Polish translation of the third edition, by Grzegorz Jakacki, *Sztuka Programowania*, Tom 1: *Algorytmy Podstawowe* (Warsaw: Wydawnictwa Naukowo-Techniczne, 2002), xxiv + 679 pp.
- Polish translation of Volume 1, Fascicle 1, by Grzegorz Jakacki, *MMIX — komputer na nowe tysiąclecie* (Warsaw: Wydawnictwa Naukowo-Techniczne, 2008), xii + 146 pp.
- Korean translation of the third edition, by Ryu Gwang (Seoul: Hanbit Media, 2006), 793 pp.

- Czech translation of the third edition, by David Krásenský, *Umění programování*, 1. díl, *Základní algoritmy* (Brno: Computer Press, 2008), xx + 649 pp.
- German translation of the third edition (Heidelberg: Springer), in preparation.
- Greek translation of the third edition (Athens: Tziolas), in preparation.
- Macedonian translation of the third edition (Skopje: Prosvetno Delo), in preparation.
- The Art of Computer Programming*, Vol. 2: *Seminumerical Algorithms* (Reading, Mass.: Addison–Wesley, 1969), xii + 624 pp. Second printing, revised, November 1971.
- Second edition, completely revised, January 1981, xiv + 689 pp.
- Third edition, completely revised, September 1997, originally xiv + 762 pp.; xiv + 764 pp. since 2011.
- Russian translation, by Galina P. Babenko, É. G. Belaga, and L. V. Mańorov, edited by K. I. Babenko, *Iskusstvo programmirovaniâ dliâ ÉVM*, T. 2: *Poluchislennye algoritmy* (Moscow: Mir, 1977), 724 pp.
- Russian translation of the third edition, under direction of Í. V. Kozachenko, by L. F. Kozachenko, V. T. Tertyshnyĭ, and I. V. Krasikov, edited by S. N. Trigub, *Iskusstvo programmirovaniâ*, T. 2: *Poluchislennye algoritmy* (Moscow: Vil'iams, 2000), 830 pp.
- Japanese translation, under direction of Takakazu Simauti, in two volumes: Chapter 3, by Masaaki Sibuya, *Jun Suchi Sampō / Ransū* (Tokyo: Saiensu-Sha, 1982), ii + 259 pp.; Chapter 4, by Keisuke Nakagawa, *Jun Suchi Sampō / Sanjutsu Enzan* (Tokyo: Saiensu-Sha, 1986), xii + 536 pp.
- Japanese translation of the third edition, by Hiroaki Saito, Takahiro Nagao, Shogo Matsui, Takao Matsui, and Hitoshi Yamaushi, supervised by Makoto Arisawa and Eiiti Wada (Tokyo: ASCII Corporation, 2004), xvi + 725 pp. Republished in softcover (Tokyo: ASCII DWANGO, 2015).
- Romanian translation, by Florian Petrescu, Ioan Georgescu, Rolanda Predescu, and Paul Zamfirescu, *Tratat de programarea calculatoarelor*, V. 2: *Algoritmi seminumerici* (Bucharest: Editura tehnică, 1983), 722 pp.
- Romanian translation of the third edition, by Mihaela Târpa, Cora Radulian, and Mihai Iosif, *Arta programării calculatoarelor*, V. 2: *Algoritmi seminumerici* (Bucharest: Editura Teora, 2002), 663 pp.
- Spanish translation, *Algoritmos seminuméricos*, in preparation (Barcelona: Reverté).
- Chinese translation, by Guan JiWen and Su YunLin, under direction of Lu Ruqian, *Ji Suan Ji Cheng Xu She Ji Ji Qiao*, 2. Juan: *Ban Shu Zhi Suan Fa* (Beijing: Defense Industry Publishing Co., 1992), 10 + 622 pp.
- Chinese translation of the third edition, by Su Yunlin, *Jisuanji Chengxu Sheji Yishu*, 2. Juan: *Ban Shuzhi Suanfa* (Beijing: National Defense Industry Press, 2002), xii + 760 pp.
- Chinese translation of the third edition, *Jisuanji Chengxu Sheji Yishu*, 2. Juan: *Ban Shuzhi Suanfa* (Beijing: Posts & Telecom Press, 2016), x + 603 pp.
- Hungarian translation, under direction of Miklós Simonovits, *A Számítógép-Programozás Művészete*, V. 2: *Szeminumerikus Algoritmusok* (Budapest: Műszaki Könyvkiadó, 1987), 690 pp.
- Polish translation of the third edition, by Adam Malinowski, *Sztuka Programowania*, Tom 2: *Algorytmy Seminumeryczne* (Warsaw: Wydawnictwa Naukowo-Techniczne, 2002), xviii + 820 pp.
- German translation of Chapter 4, by Rüdiger Loos, *Arithmetik* (Heidelberg: Springer, 2001), xiii + 538 pp.
- Korean translation of the third edition, by Ryu Gwang (Seoul: Hanbit Media, 2007), 933 pp.
- Macedonian translation of the third edition (Skopje: Prosvetno Delo), in preparation.
- Czech translation of the third edition, by David Krásenský, *Umění programování*, 2. díl, *Seminumerické algoritmy* (Brno: Computer Press, 2010), xii + 763 pp.
- Greek translation of the third edition (Athens: Tziolas), in preparation.
- The Art of Computer Programming*, Vol. 3: *Sorting and Searching* (Reading, Mass.: Addison–Wesley, 1973), xii + 722 pp. + foldout illustration. Second printing, revised, March 1975, xii + 725 pp.
- Second edition, completely revised, February 1998, originally xiv + 780 pp.; xiv + 782 pp. since 2011.
- Romanian translation, by Rodica Boconcios, A. Davidoviciu, P. Dimo, Fl. Moraru, A. Petrescu, I. Sipoş, and Smaranda Dimitriu, *Tratat de programarea calculatoarelor*, V. 3: *Sortare și căutare* (Bucharest: Editura tehnică, 1976), xii + 736 pp.
- Romanian translation of the second edition, by Mihaela Târpa, *Arta programării calculatoarelor*, V. 3: *Sortare și căutare* (Bucharest: Editura Teora, 2002), 680 pp.
- Russian translation, by Nadezhda I. V'îukova, V. A. Galatenko, and A. B. Khodulev, edited by Í. M. Baĭákovskĭĭ and V. S. Štarkman, *Iskusstvo programmirovaniâ dliâ ÉVM*, T. 3: *Sortirovka i poisk* (Moscow: Mir, 1978), 844 pp.

- Russian translation of the second edition, under direction of  $\hat{\text{U}}$ . V. Kozachenko, by V. T. Tertyshnyĭ and I. V. Krasikov, edited by S. N. Trigub, *Iskusstvo programmirovaniâ*, T. 3: *Sortirovka i poisk* (Moscow: Vil'iams, 2000), 823 pp.
- Japanese translation of the second edition, by Yuichiro Ishii, Hiroshi Ichiji, Hiroshi Koide, Eiko Takaoka, Kumiko Tanaka, and Takahiro Nagao, supervised by Makoto Arisawa and Eiiti Wada (Tokyo: ASCII Corporation, 2006), xvi + 741 pp. Republished in softcover (Tokyo: ASCII DWANGO, 2015).
- Chinese translation, by Guan JiWen and Su YunLin, under direction of Lu Ruqian, *Ji Suan Ji Cheng Xu She Ji Ji Qiao*, 3. Juan: *Pai Xu He Cha Zhao* (Beijing: Defense Industry Publishing Co., 1985), viii + 645 pp.
- Chinese translation of the second edition, by Su Yunlin, *Jisuanji Chengxu Sheji Yishu*, 3. Juan: *Paixu Yu Chazhao* (Beijing: National Defense Industry Press, 2002), x + 779 pp.
- Spanish translation, by Jaime de Argila y de Chopitea and Ramón Puigjaner Trepas, under direction of Ramón Puigjaner Trepas, *El Arte de Programar Ordenadores*, V. 3: *Clasificación y Búsqueda* (Barcelona: Reverté, 1980), xxiii + 672 pp.
- Hungarian translation, under direction of Miklós Simonovits, *A Számítógép-Programozás Művészete*, V. 3: *Keresés és Rendezés* (Budapest: Műszaki Könyvkiadó, 1988), 761 pp.
- Polish translation of the second edition, by Krzysztof Diks and Adam Malinowski, *Sztuka Programowania*, Tom 3: *Sortowanie i Wyszukiwanie* (Warsaw: Wydawnictwa Naukowo-Techniczne, 2002), xviii + 838 pp.
- Korean translation of the second edition, by Ryu Gwang (Seoul: Hanbit Media, 2008), 939 pp.
- Macedonian translation of the second edition (Skopje: Prosvetno Delo), in preparation.
- Greek translation of the second edition (Athens: Tziolas), in preparation.
- Czech translation of the second edition (Brno: Computer Press), in preparation.
- Albanian translation of the second edition, in preparation.
- The Art of Computer Programming*, Volume 4, Fascicle 0: *Introduction to Combinatorial Algorithms and Boolean Functions* (Upper Saddle River, N.J.: Addison–Wesley, 2008), xii + 216 pp.
- Japanese translation of Volume 4, Fascicle 0, by Eiiti Wada (Tokyo: ASCII Corporation, 2009), xii + 206 pp.
- Chinese translation of Volume 4, Fascicle 0, under direction of Lin Peng Huang (Beijing: China Machine Press, 2010), xii + 432 pp.
- Hungarian translation of Volume 4, Fascicle 0 by Zsuzsanna Láng, András Hajdu, Katalin Pásztorné Varga, Magda Várterész, and Gabor Alagi, under direction of Antal Iványi, *Bevezetés a kombinatorikai algoritmusokhoz és Boole-függvényekhez* (Budapest: Antoncom Infokommunikációs, 2011), 272 pp.
- Macedonian translation of Volume 4, Fascicle 0 (Skopje: Prosvetno Delo), in preparation.
- The Art of Computer Programming*, Volume 4, Fascicle 1: *Bitwise Tricks & Techniques; Binary Decision Diagrams* (Upper Saddle River, N.J.: Addison–Wesley, 2008), viii + 261 pp.
- Japanese translation of Volume 4, Fascicle 1, by Eiiti Wada (Tokyo: ASCII Corporation, 2011), x + 256 pp.
- Hungarian translation of Volume 4, Fascicle 1 by Csaba Bánsághi, Rita Csákány, Endre Daróczy-Kiss, Lehel Kovács, László Domoszlai, Péter Ligeti, Mónika Makai, and Dániel Szisz, under direction of Antal Iványi, *Bittrükkök és bitmódszerek; Bináris döntési diagramok* (Budapest: Antoncom Infokommunikációs, 2011), 311 pp.
- The Art of Computer Programming*, Volume 4, Fascicle 2: *Generating All Tuples and Permutations* (Upper Saddle River, N.J.: Addison–Wesley, 2005), v + 127 pp.
- Romanian translation of Volume 4, Fascicle 2, by Cora Radulian: *Generarea tuturor tuplurilor și permutărilor* (Bucharest: Editura Teora, 2005), vii + 144 pp.
- Japanese translation of Volume 4, Fascicle 2, by Hiroshi Koide, supervised by Makoto Arisawa and Eiiti Wada (Tokyo: ASCII Corporation, 2006), viii + 129 pp.
- Russian translation of Volume 4, Fascicle 2, by Yu. G. Gordienko, *Generatsiâ vsekh kortezheĭ i perestanovok* (Moscow: Vil'iams, 2007), 146 pp.
- Polish translation of Volume 4, Fascicle 2, by Adam Malinowski, *Generowanie wszystkich krotek i permutacji* (Warsaw: Wydawnictwa Naukowo-Techniczne, 2007), xiv + 137 pp.
- Hungarian translation of Volume 4, Fascicle 2 by Zoltán Kása and Csaba István Sidló, under direction of Antal Iványi, *Permutációk és n-esek előállítás* (Budapest: Antoncom Infokommunikációs, 2008), 160 pp.
- The Art of Computer Programming*, Volume 4, Fascicle 3: *Generating All Combinations and Partitions* (Upper Saddle River, N.J.: Addison–Wesley, 2005), v + 150 pp.

- Russian translation of Volume 4, Fascicle 3, by I. V. Krasikov, *Generatsiâ vsekhn sochetaniï i razbieniï* (Moscow: Vil'iams, 2007), 200 pp.
- Hungarian translation of Volume 4, Fascicle 3 by László Szalay, Mihály Szalay, and Lajos Lóczy, under direction of Antal Iványi, *Kombinációk és partíciók előállításai* (Budapest: Antoncom Infokommunikációs, 2008), 176 pp.
- Japanese translation of Volume 4, Fascicle 3, by Kazuhiko Takehi, supervised by Makoto Arisawa and Eiiti Wada (Tokyo: ASCII Corporation, 2008), viii + 154 pp.
- Polish translation of Volume, Fascicle 3, in preparation.
- The Art of Computer Programming*, Volume 4, Fascicle 4: *Generating All Trees; History of Combinatorial Generation* (Upper Saddle River, N.J.: Addison–Wesley, 2006), vi + 120 pp.
- Russian translation of Volume 4, Fascicle 4, by I. V. Krasikov, *Generatsiâ vsekhn derev'ev. Istoriâ kombinatornoi generatsii* (Moscow: Vil'iams, 2007), 156 pp.
- Hungarian translation of Volume 4, Fascicle 4, by János Virágh, under direction of Antal Iványi, *Fák előállításai; Kombinatorikus előállítások története* (Budapest: Antoncom Infokommunikációs, 2008), 160 pp.
- Japanese translation of Volume 4, Fascicle 4, by Kazuhiko Takehi and Hiroshi Koide, supervised by Makoto Arisawa and Eiiti Wada (Tokyo: ASCII Corporation, 2010), viii + 118 pp.
- Polish translation of Volume, Fascicle 4, in preparation.
- The Art of Computer Programming*, Volume 4A: *Combinatorial Algorithms, Part 1* (Upper Saddle River, N. J.: Addison–Wesley, 2011), xvi + 883 pp.
- Russian translation (Moscow: Vil'iams), in preparation.
- Chinese translation (Beijing: Posts & Telecommunications Press), in preparation.
- Japanese translation by Kazuhiko Takehi and Hiroshi Koide, supervised by Makoto Arisawa and Eiiti Wada (Tokyo: ASCII DWANGO, 2017), xvi + 866 pp.
- The Art of Computer Programming*, Volume 4, Fascicle 6: *Satisfiability* (Boston, Massachusetts: Addison–Wesley, 2015), viii + 310 pp.
- MIX* (Reading, Mass.: Addison–Wesley, 1971), 48 pp.
- Surreal Numbers* (Reading, Mass.: Addison–Wesley, 1974), vi + 119 pp.
- Czech translation, by Helena Nešetřilová, *Nadreálná čísla*, in *Pokroky Matematiky, Fyziky a Astronomie* **23** (1978), 66–76, 130–139, 187–196, 246–261.
- German translation, by Brigitte and Karl Kunisch, *Insel der Zahlen* (Braunschweig: Friedr. Vieweg & Sohn, 1979), 124 pp.
- Japanese translation, by Junji Koda, *Chogen Jis Su* (Tokyo: Kaimei Sha Ltd., 1978), 179 pp.
- Another Japanese translation, by Junji Koda, *Chogen Jis Su*, published in eight monthly installments in *Basic Sūgaku* (August 1978 through March 1979).
- Japanese translation, by Shunsuke Matsuura, *Shifuku no Cogen Jis Su*, illustrated by Yusuke Saito (Tokyo: Kashiwa Shobo, 2005), 174 pp.
- Spanish translation, by Lluç Garriga, *Números Surreales* (Barcelona: Reverté, 1979), 101 pp.
- Hungarian translation, by János Virágh and Zoltán Ésik, *Számok valóson innen és túl* (Budapest: Gondolat, 1987), 136 + ii pp.
- Portuguese translation, by Jorge Nuno Silva, *Números Surreais* (Lisbon: Gradiva, 2002), 113 pp.
- Chinese translation, by Bo Gao (Beijing: Publishing House of Electronics Industry, 2011), xii + 189 pp.
- Russian translation, by M. S. Strigunova, *Syurrealnye Chisla* (Moscow: BKL Publishers, 2014), 110 pp.
- Italian translation (Milan: Franco Angeli), in preparation.
- Mariages Stables et leurs relations avec d'autres problèmes combinatoires* (Montréal: Les Presses de l'Université de Montréal, 1976), 106 pp. Édition revue et corrigée, 1981. Currently available from Les Publications CRM / Centre de Recherches Mathématiques, Université de Montréal, Montréal, Quebec.
- English translation, by Martin Goldstein, *Stable Marriage and its Relation to Other Combinatorial Problems* (Providence, R. I.: American Mathematical Society, 1997), xiii + 74 pp. (CRM Proceedings & Lecture Notes, Volume 10.)
- Russian translation, by Olga Kashina and Eduard Lerner, *Ustoïchivye paroschetaniya i drugie kombinatornye zadachi* (Moscow: Moscow Center for Continuous Mathematical Education, 2014), 80 pp.

- TEX and METAFONT: New Directions in Typesetting* (Providence, R.I.: American Mathematical Society, and Bedford, Mass.: Digital Press, 1979), xi + 45 + 201 + 105 pp.
- (with Daniel H. Greene) *Mathematics for the Analysis of Algorithms* (Boston, Mass.: Birkhäuser Boston, 1981), 107 pp. [Progress in Computer Science and Applied Logic, Volume 1.] Second edition, 1982, 123 pp. Third edition, 1990, viii + 132 pp.
- Russian translation of the second edition, by B. B. Pokhodzeĭ, edited by Yuri V. Matiĭasevich, *Matematicheskie metody analiza algoritmov* (Moscow: Mir, 1987), 120 pp. Modern Birkhäuser Classics release (a paperback and eBook reprint of the third edition), 2008, x + 132 pp.
- Japanese translation, in preparation (Kindai Kagaku Sha).
- The TEXbook* (Reading, Mass.: Addison–Wesley, 1984), x + 483 pp. Second printing, revised, October 1984. Sixth printing, revised, January 1986; also published as *Computers & Typesetting*, Vol. A. Twenty-sixth printing, 1996, contains final revisions.
- Japanese translation, by Yoshiteru Sagiya and Nobuo Saito, *TEXbukku, konpyuuta ni yoru sohan sisutemu* (Tokyo: ASCII Corporation, 1989), xix + 657 pp.
- Russian translation, by M. V. Lisina, edited by S. V. Klimenko and S. N. Sokolov, *Vse pro TEX* (Protvino, Moscow: AO RDT<sub>EX</sub>, 1993), xvi + 575 pp.
- Russian translation, by L. F. Kozachenko, edited by Yu. V. Kozachenko, *Vse pro TEX* (Moscow: Vil'iams, 2003), 549 pp.
- French translation, by Jean-Côme Charpentier, *Le TEXbook: Composition informatique* (Paris: Vuibert Informatique, 2003), xiv + 555 pp.
- Polish translation, by Piotr Bolek, Włodzimierz Bzyl, and Adam Dawidziuk, *TEX: Przewodnik użytkownika* (Warsaw: Wydawnictwa Naukowo-Techniczne, 2005), xviii + 541 pp.
- Computers & Typesetting*, Vol. B: *TEX: The Program* (Reading, Mass.: Addison–Wesley, 1986), xvi + 594 pp. Fifth printing, xviii + 600 pp., 1994.
- The METAFONTbook* (Reading, Mass.: Addison–Wesley, 1986), xii + 361 pp.; also published as *Computers & Typesetting*, Vol. C.
- Japanese translation, by Yoshiteru Sagiya, *METAFONT bukku* (Tokyo: ASCII Corporation, 1994), xvi + 451 pp.
- Russian translation, by Mustafa R. Sait-Ametov, advised by Yu. V. Kozachenko, *Vse pro METAFONT* (Moscow: Vil'iams, 2003), 375 pp.
- Computers & Typesetting*, Vol. D: *METAFONT: The Program* (Reading, Mass.: Addison–Wesley, 1986), xvi + 560 pp. Third printing, xviii + 566 pp., 1991.
- Computers & Typesetting*, Vol. E: *Computer Modern Typefaces* (Reading, Mass.: Addison–Wesley, 1986), xvi + 588 pp.
- (with Ronald L. Graham and Oren Patashnik) *Concrete Mathematics* (Reading, Mass.: Addison–Wesley, 1989), xiii + 625 pp. Second Edition, January 1994, xiii + 657 pp.
- Russian translation, by A. B. Khodulev and B. B. Pokhodzeĭ, *Konkretnaiā matematika* (Moscow: Mir, 1999), 704 pp.
- Chinese translation, by Lai FeiPei, *Ju Ti Shu Xue* (Taipei: Dong Hua Publishing Co., 1990), xv + 731 pp.
- Chinese translation, by Chen YanWen, *Ju Ti Shu Xue* (Taipei: Ru Lin Publishing Co., 1991), xii + 695 pp.
- Chinese translation, by Zhuang Xingu, *Ju Ti Shu Xue* (Xian: Xian Electronic Technology University Publishing Co., 1992), xii + 539 pp.
- Chinese translation, by Zhang Mingyao and Zhang Fan, *Ju Ti Shu Xue — Ji Suan Ji Ke Xue Ji Chu* (Beijing: Posts & Telecom Press, 2013), xiii + 564 pp.
- Italian translation, edited by Giovanni Monegato, *Matematica Discreta* (Milan: Editore Ulrico Hoepli, 1992), xviii + 607 pp.
- Japanese translation, by Makoto Arisawa, Michiaki Yasumura, Tatsuya Hagino, and Kiyoshi Ishihata, *Kompyuta no Sūgaku* (Tokyo: Kyoritsu-Shuppan, 1993), xvi + 606 pp.
- Portuguese translation, by Valéria de Magalhães Iorio, *Matemática Concreta* (Rio de Janeiro: Livros Técnicos e Científicos Editora, 1995), xii + 477 pp.

- Polish translation, by Piotr Chrzastowski, A. Czumaj, L. Gašieniec, and M. Racunas, *Matematyka Konkretna* (Warszawa: Polskie Wydawnictwa Naukowe, 1996), 718 pp. (Another edition is scheduled for 2015.)
- Hungarian translation, by Sándor Fridli, János Gonda, Attila Kovács, László Lakatos, and Csabáné Láng, *Konkrét Matematika* (Műszaki Könyvkiadó, 1998), xvi + 647 pp.
- French translation, by Alain Denise, *Mathématiques concrètes* (Paris: International Thomson Publishing, 1998; later acquired by Vuibert Informatique), xiv + 688 pp.
- Greek translation by Christos A. Kapoutsis, *Synkritá Mathēmatiká* (Athens: Kleidarithmos Publications, 2011), 640 pp.
- Spanish translation (Addison–Wesley Spain and Universidad Autonoma de Madrid), in preparation.
- Croatian translation (Zagreb: Golden Marketing), in preparation.
- Korean translation, by Ryu Gwang (Seoul: Insight Press, 2018), xix + 796 pp.
- (with Tracy L. Larrabee and Paul M. Roberts) *Mathematical Writing* (Washington, D.C.: Mathematical Association of America, 1989), ii + 115 pp.
- Japanese translation, by Makoto Arisawa, with additional illustrations and notes by the translator, *Kunuusu Sensei no Dokyumento Sampo* (Tokyo: Kyoritsu-Shuppan, 1989), x + 194 pp; second edition, 1993.
- 3:16 Bible Texts Illuminated* (Madison, Wisconsin: A-R Editions, 1990), iii + 268 pp. Second printing, revised, January 1992. Third printing (Middleton, Wisconsin, A-R Editions, 2013).
- French translation by Denis Serre, *Bible 3.16 en lumière* (Paris: Editions Bayard, 2017), 416 pp.
- Kunuusu Sensei no Program-Ron* [Professor Knuth’s Programming Discipline], anthology edited by Makoto Arisawa (Tokyo: Kyoritsu-Shuppan, 1991), v + 199 pp.
- Literate Programming* (Stanford, California: Center for the Study of Language and Information, 1992), xvi + 368 pp. (CSLI Lecture Notes, no. 27.)
- Japanese translation, by Makoto Arisawa, *Bungeiteki Programming* (Tokyo: ASCII Corporation, 1994), 463 pp.
- Axioms and Hulls* (Heidelberg: Springer-Verlag, 1992), ix + 109 pp. (Lecture Notes in Computer Science, no. 606.)
- The Stanford GraphBase: A Platform for Combinatorial Computing*. (New York: ACM Press, 1994), viii + 576 pp.
- (with Silvio Levy) *The CWEB System of Structured Documentation*. (Reading, Massachusetts: Addison–Wesley, 1993), iv + 227 pp.
- Version 3.6, with hypertext support (Reading, Massachusetts: Addison–Wesley, 2001), ii + 237 pp.
- Selected Papers on Computer Science* (Stanford, California: Center for the Study of Language and Information, 1996), xii + 274 pp. (CSLI Lecture Notes, no. 59.) Co-published with Cambridge University Press.
- Digital Typography* (Stanford, California: Center for the Study of Language and Information, 1999), xvi + 685 pp. (CSLI Lecture Notes, no. 78.)
- Russian translation, by Roman Kuznets, Olga Makhovaia, Nikolai Tretiakov, and Yurii Tyumentsev, edited by Irina Makhovaia, *Komp’iuternaia Tipografiia* (Moscow: Mir, 2003), 669 pp.
- MMIXware* (Heidelberg: Springer-Verlag, 1999), vii+550 pp. (Lecture Notes in Computer Science, no. 1750.)
- Japanese translation, by Tooru Takizawa, (SiB access Co., Ltd., 2002), viii + 550 pp.
- Selected Papers on Analysis of Algorithms* (Stanford, California: Center for the Study of Language and Information, 2000), xvi + 621 pp. (CSLI Lecture Notes, no. 102.) Printings made after 2006 have xvi + 622 pp., because the index has gotten longer.
- Things a Computer Scientist Rarely Talks About* (Stanford, California: Center for the Study of Language and Information, 2001), xi + 257 pp. (CSLI Lecture Notes, no. 136.)
- Japanese translation, by Tooru Takizawa, Yuko Makino, and Noboru Tomizawa, *Computer kagakusha ga mettanī Kataranaī Koto* (Tokyo: SiBaccess Co., Ltd., 2003), x + 260 pp.

- Selected Papers on Discrete Mathematics* (Stanford, California: Center for the Study of Language and Information, 2003), xvi + 812 pp. (CSLI Lecture Notes, no. 106.)
- Selected Papers on Computer Languages* (Stanford, California: Center for the Study of Language and Information, 2003), xvi + 594 pp. (CSLI Lecture Notes, no. 139.)
- Selected Papers on Design of Algorithms* (Stanford, California: Center for the Study of Language and Information, 2010), xvi + 453 pp. (CSLI Lecture Notes, no. 191.)
- Selected Papers on Fun and Games* (Stanford, California: Center for the Study of Language and Information, 2011), xvii + 741 pp. (CSLI Lecture Notes, no. 192.)
- French translation, by Patrick Cégielski, of selections from all eight *Selected Papers* volumes, *Algorithmes pour une histoire de l'informatique* (Paris: Société mathématique de France, 2011), xvi + 371 pp. (CSLI Lecture Notes, no. 190.) *Éléments pour une histoire de l'informatique* (Paris: Société mathématique de France, 2011), xiv + 510 pp. (CSLI Lecture Notes, no. 194.)
- Companion to the Papers of Donald Knuth* (Stanford, California: Center for the Study of Language and Information, 2011), xiii + 441 pp. (CSLI Lecture Notes, no. 202.)
- (with Andrea Gilbert, Bram Cohen, Ed Pegg, Jr., Erich Friedman, Harry Nelson, Helen Grabarchuk, Peter Grabarchuk, Richard Candy, Serhiy Grabarchuk, Shelly Hazard, and Tanya Grabarchuk) *Puzzle Box 1* (Mineola, New York: Dover Publications, 2016), 96 pp.
- (with Andy Parr, Ed Pegg, Jr., Gianni Sarcone, Erich Friedman, Hasan Yurtoglu, Helen Grabarchuk, Richard Candy, Shelly Hazard, Peter Grabarchuk, Serhiy Grabarchuk, and Tanya Grabarchuk) *Puzzle Box 2* (Mineola, New York: Dover Publications, 2017), 96 pp.
- (with Ali Kiliç, Andrea Gilbert, Dennis Shasha, Ed Pegg, Jr., Erich Friedman, Harry Nelson, Helen Grabarchuk, Peter Grabarchuk, Serhiy Grabarchuk, Shelly Hazard, and Tanya Grabarchuk) *Puzzle Box 3* (Mineola, New York: Dover Publications, 2017), 96 pp.
- Fantasia Apocalyptica*. Organ score, downloadable as 23 separate PDF files from <http://cs.stanford.edu/~knuth/fant.html>, 64pp.
- (with Duane R. Bibby) *Fantasia Apocalyptica Illustrated*. (Stanford, California: Center for the Study of Language and Information, 2018), xiii + 255 pp.

## 2. Videos and Audiotapes

*Problem Solving with Donald Knuth. The Stanford Video Journal*, Vol. 1 (Stanford, California: Stanford Instructional Television Network, 1985). Twenty 75-minute tapes.

“The Literate Mathematician,” in BBC Radio 5’s series *Maths Miscellany*, produced by John Jaworski and Giselle Corbett (first broadcast February 21, 1993), 30 min. Cassettes available from BBC OUPC, Walton Hall, Milton Keynes, MK7 6BH, England.

“Computer Musings: The associative law, or The anatomy of rotations in binary trees,” *The Distinguished Lecture Series 7* (Stanford, CA: University Video Communications, 1993), 68 min.

“Graph drawing from a user’s perspective,” opening lecture at the conference on Graph Drawing at MSRI, Berkeley, 18 September 1996. [<http://www.msri.org/publications/ln/msri/1996/graph/knuth/1/>]

“Some research problems for combinatorialists,” lecture at MSRI, Berkeley, 27 January 1997. [[http://www.msri.org/publications/ln/msri/1997/non\\_workshop/knuth/1/](http://www.msri.org/publications/ln/msri/1997/non_workshop/knuth/1/)]

*Donald Knuth: God and Computers*, seven public lectures delivered at MIT in the fall of 1999. [[http://technetcast.ddj.com/tnc\\_program.html?program\\_id=50](http://technetcast.ddj.com/tnc_program.html?program_id=50)]

*Donald Knuth: MMIX, A RISC Computer for the New Millennium*, a lecture to the Boston chapter of ACM on 15 December 1999. [[http://technetcast.ddj.com/tnc\\_play\\_stream.html?stream\\_id=199](http://technetcast.ddj.com/tnc_play_stream.html?stream_id=199)]

*All Questions Answered*, talk at Oslo Institute for Informatics, 30 August 2002. [<http://www.ifi.uio.no/foredrag/knuth-2002.html>]

*Bottom-Up Education; or, The Search for Intelligent Life in the University*, keynote speech at ITiCSE 2003, Thessaloniki, 2 July 2003. [<http://iticse2003.uom.gr/>]

“Donald Knuth: Founding Artist of Computer Science,” profile/interview on National Public Radio by David Kestenbaum, *Morning Edition* (14 March 2005). [<http://www.npr.org/templates/story/story.php?storyId=4532247>]

*Donald Knuth: My Life Story*, a DVD-ROM produced by Peoples Archive (2007); 97 segments, totalling 442 minutes. [<http://www.peoplesarchive.com/browse/movies/6895/>] [these stories can now be viewed at <http://www.webofstories.com/play/17060>]

*Computer Musings by Professor Donald E. Knuth*, a collection of Stanford lectures that are available online. [<http://scpd.stanford.edu/free-stuff/engineering-archives/donald-e-knuth-lectures>]

[Dozens of further videos of lectures are now on the internet; in 2004 I stopped trying to list them.]



### 3. Papers (\* means written by coauthor)

- P1.** The potrzebie system of weights and measures. *MAD Magazine* **1**, 33 (June 1957), 36–37. (Illustrated by Wallace Wood.) Reprinted in *Like, MAD* (New York: Signet Pocket Books No. S1838, 1960), 139–145. Page 36 reprinted in *Completely MAD* by Maria Reidelbach (Boston, Mass.: Little, Brown, 1991), 191. Reprinted with an addendum as Chapter 1 of *Selected Papers on Fun and Games* (see under Books).
- P2.** RUNCIBLE — Algebraic translation on a limited computer. *Communications of the ACM* **2**, 11 (November 1959), 18–21. Reprinted with amendments as Chapter 21 of *Selected Papers on Computer Languages* (see under Books).
- P3.** An imaginary number system. *Communications of the ACM* **3** (April 1960), 245–247. Errata, *Communications of the ACM* **4** (August 1961), 355. Reprinted as Chapter 18 of *Selected Papers on Discrete Mathematics* (see under Books).
- \*P4.** (with R. C. Bose, I. M. Chakravarti) On methods of constructing sets of mutually orthogonal latin squares using a computer. Part I: *Technometrics* **2** (1960), 507–516. Part II: *Technometrics* **3** (1961), 111–117.
- P5.** Minimizing drum latency time. *Journal of the ACM* **8** (April 1961), 119–150. Reprinted with an addendum as Chapter 28 of *Selected Papers on Design of Algorithms* (see under Books).
- P6.** (with Jack N. Merner) ALGOL 60 *Confidential*. *Communications of the ACM* **4** (June 1961), 268–272. Reprinted as Chapter 4 of *Selected Papers on Computer Languages* (see under Books).
- P7.** (with G. A. Bachelor, J. R. H. Dempster, J. Speroni) SMALGOL-61. *Communications of the ACM* **4** (November 1961), 499–502. Reprinted as Chapter 5 of *Selected Papers on Computer Languages* (see under Books).
- P8.** Euler’s constant to 1271 places. *Mathematics of Computation* **16** (1962), 275–281. Reprinted with an addendum as Chapter 26 of *Selected Papers on Design of Algorithms* (see under Books).
- P9.** Evaluation of polynomials by computer. *Communications of the ACM* **5** (December 1962), 595–599. Reprinted with an addendum as Chapter 27 of *Selected Papers on Design of Algorithms* (see under Books).
- P10.** A history of writing compilers. *Computers and Automation* **11**, 12 (December 1962), 8–18. Reprinted in *Compiler Techniques*, Bary W. Pollack, ed., (Princeton: Auerbach, 1972), 38–56. Reprinted as Chapter 20 of *Selected Papers on Computer Languages* (see under Books). French translation by Patrick Cégielski in *Éléments pour une histoire de l’informatique* (see under Books), 179–198.
- P11.** Computer-drawn flowcharts. *Communications of the ACM* **6** (September 1963), 555–563. Reprinted as Chapter 22 of *Selected Papers on Computer Languages* (see under Books).
- P12.** Length of strings for a merge sort. *Communications of the ACM* **6** (November 1963), 685–688. Reprinted with additional material as Chapter 14 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P13.** Transcendental numbers based on the Fibonacci sequence. *Fibonacci Quarterly* **2** (1964), 43–44, 52. Reprinted with an addendum as Chapter 15 of *Selected Papers on Fun and Games* (see under Books).
- P14.** Billiard balls in an equilateral triangle. *Recreational Mathematics Magazine* #14 (January–February 1964), 20–23. Reprinted with an addendum as Chapter 9 of *Selected Papers on Fun and Games* (see under Books).
- P15.** (with L. L. Bumgarner, D. E. Hamilton, P. Z. Ingerman, M. P. Lietzke, J. N. Merner, D. T. Ross) A proposal for input-output conventions in ALGOL 60. *Communications of the ACM* **7** (May 1964), 273–283. Russian translation by M. I. Ageev in *Sovremennoe Programirovanie* **1** (Moscow: Soviet Radio, 1966), 73–107. Reprinted as Chapter 7 of *Selected Papers on Computer Languages* (see under Books).
- P16.** (with J. L. McNeley) SOL — A symbolic language for general-purpose systems simulation. *IEEE Transactions on Electronic Computers* **EC-13** (1964), 401–408. Reprinted as Chapter 9 of *Selected Papers on Computer Languages* (see under Books).
- P17.** (with J. L. McNeley) A formal definition of SOL. *IEEE Transactions on Electronic Computers* **EC-13** (1964), 409–414. Reprinted as Chapter 10 of *Selected Papers on Computer Languages* (see under Books).

- P18.** Representing numbers using only one 4. *Mathematics Magazine* **37** (1964), 308–310. Reprinted with an addendum as Chapter 10 of *Selected Papers on Fun and Games* (see under Books).
- P19.** (with Marshall Hall, Jr.) Combinatorial analysis and computers. *American Mathematical Monthly* **72**, part 2, *Computers and Computing*, Slaughter Memorial Papers No. 10 (February 1965), 21–28. Reprinted as Chapter 1 of *Selected Papers on Discrete Mathematics* (see under Books).
- P20.** (with J. D. Alanen) Tables of finite fields. *Sankhyā*, series A, **26** (1964), 305–328. Reprinted as Chapter 19 of *Selected Papers on Discrete Mathematics* (see under Books).
- P21.** Finite semifields and projective planes. *Journal of Algebra* **2** (1965), 182–217. Reprinted in *Neofields and Combinatorial Designs*, ed. by D. Frank Hsu, *Advances in Discrete Mathematics and Computer Science* **1** (Nonantum, Massachusetts: Hadronic Press, 1984), 57–92. Reprinted as Chapter 20 of *Selected Papers on Discrete Mathematics* (see under Books).
- P22.** A class of projective planes. *Transactions of the American Mathematical Society* **115** (1965), 541–549. Reprinted as Chapter 21 of *Selected Papers on Discrete Mathematics* (see under Books).
- P23.** On the translation of languages from left to right. *Information and Control* **8** (1965), 607–639. Russian translation by A. A. Muchnik in *Īazyki i Avtomaty*, ed. by A. N. Maslov and Ė. D. Stotskiĭ (Moscow: Mir, 1975), 9–42. Reprinted in *Great Papers in Computer Science*, edited by Phillip Laplante (St. Paul, Minnesota: West Publishing, 1996), 150–173. Reprinted as Chapter 15 of *Selected Papers on Computer Languages* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 321–356.
- P24.** Construction of a random sequence. *BIT* **5** (1965), 246–250. Reprinted as Chapter 17 of *Selected Papers on Discrete Mathematics* (see under Books).
- P25.** An almost linear recurrence. *Fibonacci Quarterly* **4** (1966), 117–128. Reprinted as Chapter 37 of *Selected Papers on Discrete Mathematics* (see under Books).
- P26.** Oriented subtrees of an arc digraph. *Journal of Combinatorial Theory* **3** (1967), 309–314. Reprinted as Chapter 12 of *Selected Papers on Discrete Mathematics* (see under Books).
- P27.** (with Thomas J. Buckholtz) Computation of tangent, Euler, and Bernoulli numbers. *Mathematics of Computation* **21** (1967), 663–688. Reprinted with an addendum as Chapter 25 of *Selected Papers on Design of Algorithms* (see under Books).
- P28.** (with Richard H. Bigelow) Programming languages for automata. *Journal of the ACM* **14** (October 1967), 615–635. Reprinted as Chapter 12 of *Selected Papers on Computer Languages* (see under Books).
- P29.** The remaining trouble spots in ALGOL 60. *Communications of the ACM* **10** (October 1967), 611–618. Reprinted in E. Horowitz, *Programming Languages: A Grand Tour* (Computer Science Press, 1982), 61–68. Reprinted as Chapter 8 of *Selected Papers on Computer Languages* (see under Books).
- P30.** A characterization of parenthesis languages. *Information and Control* **11** (1967), 269–289. Reprinted as Chapter 13 of *Selected Papers on Computer Languages* (see under Books).
- P31.** Very magic squares. *American Mathematical Monthly* **75** (March 1968), 260–264. Reprinted with an addendum as Chapter 11 of *Selected Papers on Fun and Games* (see under Books).
- P32.** Semantics of context-free languages. *Mathematical Systems Theory* **2** (1968), 127–145. Errata, *Mathematical Systems Theory* **5** (1971), 95–96. Reprinted as Chapter 17 of *Selected Papers on Computer Languages* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 357–382.
- P33.** Another enumeration of trees. *Canadian Journal of Mathematics* **20** (1968), 1077–1086. Reprinted as Chapter 13 of *Selected Papers on Discrete Mathematics* (see under Books).
- P34.** (with Peter B. Bendix) Simple word problems in universal algebras. In *Computational Problems in Abstract Algebra*, John Leech, ed. (Oxford: Pergamon, 1970), 263–297. Reprinted in *Automation of Reasoning*, edited by Jörg H. Siekmann and Graham Wrightson, **2** (Springer, 1983), 342–376. Reprinted with an addendum as Chapter 19 of *Selected Papers on Design of Algorithms* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 437–479.
- P35.** The Gamov-Stern elevator problem. *Journal of Recreational Mathematics* **2** (1969), 131–137. Reprinted with an addendum as Chapter 12 of *Selected Papers on Fun and Games* (see under Books).

- P36.** Notes on central groupoids. *Journal of Combinatorial Theory* **8** (1970), 376–390. Reprinted as Chapter 22 of *Selected Papers on Discrete Mathematics* (see under Books).
- P37.** (with Chandler Davis) Number representations and dragon curves. *Journal of Recreational Mathematics* **3** (1970), 66–81, 133–149. Reprinted with an addendum as Chapter 44 of *Selected Papers on Fun and Games* (see under Books).
- P38.** Permutations, matrices, and generalized Young tableaux. *Pacific Journal of Mathematics* **34** (1970), 709–727. Reprinted as Chapter 31 of *Selected Papers on Discrete Mathematics* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 481–502.
- P39.** A note on solid partitions. *Mathematics of Computation* **24** (1970), 955–961. Reprinted as Chapter 33 of *Selected Papers on Discrete Mathematics* (see under Books).
- P40.** Von Neumann’s first computer program. *Computing Surveys* **2** (December 1970), 247–260. Reprinted in *Papers of John von Neumann on Computing and Computer Theory*, ed. by William Aspray and Arthur Burks (Cambridge, Mass.: MIT Press, 1987), 83–96. Reprinted with corrections as Chapter 12 of *Selected Papers on Computer Science* (see under Books). French translation by Patrick Cégielski in *Éléments pour une histoire de l’informatique* (see under Books), 53–75.
- P41.** Optimum binary search trees. *Acta Informatica* **1** (1971), 14–25. Corrigenda, p. 270. Reprinted with an addendum as Chapter 4 of *Selected Papers on Design of Algorithms* (see under Books).
- P42.** (with R. W. Floyd) Notes on avoiding ‘go to’ statements. *Information Processing Letters* **1** (1971), 23–31. Errata, p. 177. Reprinted in *Writings of the Revolution*, E. Yourdon, ed. (New York: Yourdon Press, 1982), 153–162. Reprinted as Chapter 23 of *Selected Papers on Computer Languages* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 145–157.
- P43.** Subspaces, subsets, and partitions. *Journal of Combinatorial Theory* (A) **10** (1971), 178–180. Reprinted as Chapter 35 of *Selected Papers on Discrete Mathematics* (see under Books).
- P44.** The analysis of algorithms. *Actes du Congrès International des Mathématiciens 1970*, **3** (Paris: Gauthier-Villars, 1971), 269–274. Reprinted as Chapter 3 of *Selected Papers on Analysis of Algorithms* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 137–144.
- P45.** Examples of formal semantics. In *Symposium on Semantics of Algorithmic Languages*, E. Engeler, ed., *Lecture Notes in Mathematics* **188** (Berlin: Springer, 1971), 212–235. Reprinted as Chapter 18 of *Selected Papers on Computer Languages* (see under Books).
- P46.** Mathematical analysis of algorithms. *Proceedings of IFIP Congress 1971*, **1** (Amsterdam: North-Holland, 1972), 19–27. Reprinted as Chapter 1 of *Selected Papers on Analysis of Algorithms* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 107–125.
- P47.** An empirical study of FORTRAN programs. *Software—Practice and Experience* **1** (1971), 105–133. Reprinted as Chapter 24 of *Selected Papers on Computer Languages* (see under Books).
- P48.** Top-down syntax analysis. *Acta Informatica* **1** (1971), 79–110. Russian translation by Nadezhda I. V’ũkova in *Kiberneticheskiĩ Sbornik* **15** (1978), 101–142. Reprinted as Chapter 14 of *Selected Papers on Computer Languages* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 277–320.
- P49.** (with Edward A. Bender) Enumeration of plane partitions. *Journal of Combinatorial Theory* (A) **13** (1972), 40–54. Reprinted as Chapter 32 of *Selected Papers on Discrete Mathematics* (see under Books).
- P50.** (with R. L. Graham and T. S. Motzkin) Complements and transitive closures. *Discrete Mathematics* **2** (1972), 17–29. Reprinted as Chapter 25 of *Selected Papers on Discrete Mathematics* (see under Books).
- P51.** (with N. G. de Bruijn and S. O. Rice) The average height of planted plane trees. In *Graph Theory and Computing*, R. C. Read, ed. (Academic Press, 1972), 15–22. Reprinted as Chapter 15 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P52.** (with E. B. Kaehler) An experiment in optimal sorting. *Information Processing Letters* **1** (1972), 173–176. Reprinted as Chapter 30 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P53.** Ancient Babylonian algorithms. *Communications of the ACM* **15** (July 1972), 671–677. Errata, *Communications of the ACM* **19** (February 1976), 108. Reprinted with corrections and additions as

- Chapter 11 of *Selected Papers on Computer Science* (see under Books). French translation by Patrick Cégielski in *Éléments pour une histoire de l'informatique* (see under Books), 1–20.
- P54.** George Forsythe and the development of Computer Science. *Communications of the ACM* **15** (August 1972), 721–726. Reprinted with revisions as Chapter 16 of *Selected Papers on Computer Science* (see under Books); in the first two printings it was, however, called Chapter 14.
- P55.** (with Robert W. Floyd) The Bose–Nelson sorting problem. In *A Survey of Combinatorial Theory*, Jagdish N. Srivastava, ed. (Amsterdam: North-Holland, 1973), 163–172. Reprinted with an addendum as Chapter 2 of *Selected Papers on Design of Algorithms* (see under Books).
- P56.** The dangers of computer science theory. In *Logic, Methodology, and Philosophy of Science* **4**, ed. by P. Suppes et al. (North-Holland, 1973), 189–195. Reprinted as Chapter 2 of *Selected Papers on Analysis of Algorithms* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 127–135.
- P57.** Permutations with nonnegative partial sums. *Discrete Mathematics* **5** (1973), 367–371. Reprinted as Chapter 28 of *Selected Papers on Discrete Mathematics* (see under Books).
- P58.** The triel: A new solution. *Journal of Recreational Mathematics* **6** (1973), 1–7. Reprinted with an addendum as Chapter 24 of *Selected Papers on Fun and Games* (see under Books).
- P59.** (with Jill Knuth) Mathematics and Art: The dragon curve in ceramic tile. *Journal of Recreational Mathematics* **6** (1973), 165–167. Reprinted with an addendum as Chapter 45 of *Selected Papers on Fun and Games* (see under Books).
- P60.** (with Francis R. Stevenson) Optimal measurement points for program frequency counts. *BIT* **13** (1973), 313–322. Reprinted as Chapter 5 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P61.** Wheels within wheels. *Journal of Combinatorial Theory (B)* **16** (1974), 42–46. Reprinted as Chapter 24 of *Selected Papers on Discrete Mathematics* (see under Books).
- P62.** The asymptotic number of geometries. *Journal of Combinatorial Theory (A)* **16** (1974), 398–400. Reprinted as Chapter 27 of *Selected Papers on Discrete Mathematics* (see under Books).
- P63.** Computer Science and its relation to Mathematics. *American Mathematical Monthly* **81** (April 1974), 323–343. A shorter form of this article appeared in *American Scientist* **61** (1973), 707–713; reprinted in *Computers and People* **23**, 9 (September 1974), 8–11; and in *Mathematics: People, Problems, Results*, ed. by Douglas M. Campbell and John C. Higgins, vol. 3 (Belmont, Calif.: Wadsworth, 1984), 37–47. Hungarian translation by József Pelikán in *Matematikai Lapok* **24** (1973, published 1975), 345–363. Slovenian translation by Tamara Bohte in *Obzornik za Matematiko in Fiziko* **22** (1975), 129–138, 161–167. Slovak translation (abridged) by Branislav Rován in *Pokroky Matematiky, Fiziky a Astronomie* **21** (1976), 88–96. Russian translation by Natal'ia G. Gurevich in *Sovremennye Problemy Matematiki* **11**, 12 (Moscow: Znanie, 1977), 4–32. Reprinted in part in *A Century of Mathematics Through the Eyes of the MONTHLY*, edited by John Ewing (Mathematical Association of America, 1994), 285–288. Reprinted with corrections as Chapter 1 of *Selected Papers on Computer Science* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 1–28.
- P64.** (with O. Amble) Ordered hash tables. *The Computer Journal* **17** (May 1974), 135–142. Reprinted as Chapter 7 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P65.** (with Jayme L. Szwarcfiter) A structured program to generate all topological sorting arrangements. *Information Processing Letters* **2** (1974), 153–157; erratum, **3** (1974), 64. Reprinted with revisions as Chapter 3 of *Literate Programming* (see under Books). Japanese translation by Makoto Arisawa in *Bungeiteki Programming* (see under Books), 125–133.
- P66.** (with Michael L. Fredman) Recurrence relations based on minimization. *Journal of Mathematical Analysis and Applications* **48** (1974), 534–559. Reprinted as Chapter 38 of *Selected Papers on Discrete Mathematics* (see under Books).
- P67.** Structured programming with `go to` statements. *Computing Surveys* **6** (December 1974), 261–301. Reprinted with revisions in *Current Trends in Programming Methodology*, Raymond T. Yeh, ed., **1** (Englewood Cliffs, N.J.: Prentice–Hall, 1977), 140–194; *Classics in Software Engineering*, Edward Nash Yourdon, ed. (New York: Yourdon Press, 1979), 259–321. Reprinted with “final” revisions as Chapter 2

- of *Literate Programming* (see under Books). Japanese translation by Makoto Arisawa in *Bungeiteki Programming* (see under Books), 39–123. French translation by Patrick Cégielski in *Algorithmes* (see under Books), 159–238.
- P68.** Computer programming as an art. *Communications of the ACM* **17** (December 1974), 667–673. French translation, with three supplementary paragraphs, in *L’Informatique Nouvelle*, No. 64 (July–August 1975), 20–27. Japanese translation by Makoto Arisawa in *bit* **7** (1975), 434–444; reprinted in *Kunuuusu Sensei no Program-Ron* (see under Books), 2–19; reprinted in *Bungeiteki Programming* (see under Books), 19–38. English version reprinted with the supplementary paragraphs in *ACM Turing Award Lectures: The First Twenty Years* (New York: ACM Press, 1987), 33–46; reprinted with corrections as Chapter 1 of *Literate Programming* (see under Books). Russian translation by V. V. Martynûk in *Lektsii laureatov premii T’ûringa* (Moscow: Mir, 1993), 48–64. French translation by Patrick Cégielski in *Éléments pour une histoire de l’informatique* (see under Books), 345–362.
- P69.** Estimating the efficiency of backtrack programs. *Mathematics of Computation* **29** (1975), 121–136. Reprinted as Chapter 6 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P70.** (with Ronald W. Moore) An analysis of alpha-beta pruning. *Artificial Intelligence* **6** (1975), 293–326. Reprinted as Chapter 9 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P71.** (with James H. Morris, Jr. and Vaughan R. Pratt) Fast pattern matching in strings. *SIAM Journal on Computing* **6** (1977), 323–350. Errata, see W. Rytter, *SIAM Journal on Computing* **9** (1980), 509–512. Reprinted in *Computer Algorithms: String Pattern Matching Strategies*, ed. by Jun-ichi Aoe (Los Alamitos, California: IEEE Computer Society Press, 1994), 8–35. Reprinted with an addendum as Chapter 9 of *Selected Papers on Design of Algorithms* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 395–435.
- P72.** Random matroids. *Discrete Mathematics* **12** (1975), 341–358. Reprinted as Chapter 26 of *Selected Papers on Discrete Mathematics* (see under Books).
- P73.** (with John F. Reiser) Evading the drift in floating-point addition. *Information Processing Letters* **3** (1975), 84–87. Errata, p. 164. Reprinted with an addendum as Chapter 23 of *Selected Papers on Design of Algorithms* (see under Books).
- P74.** (with Gururaj S. Rao) Activity in an interleaved memory. *IEEE Transactions on Computers* **C-24** (1975), 943–944. Reprinted as Chapter 8 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P75.** Notes on generalized Dedekind sums. *Acta Arithmetica* **33** (1977), 297–325. Reprinted as Chapter 10 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P76.** (with Andrew C. Yao) Analysis of the subtractive algorithm for greatest common divisors. *Proceedings of the National Academy of Sciences* **72** (1975), 4720–4722. Reprinted with additional material as Chapter 13 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P77.** (with M. R. Garey, R. L. Graham, D. S. Johnson) Complexity results for bandwidth minimization. *SIAM Journal on Applied Mathematics* **34** (1978), 477–495. Reprinted with additional material as Chapter 32 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P78.** (with Luis Trabb Pardo) Analysis of a simple factorization algorithm. *Theoretical Computer Science* **3** (1976), 321–348. Reprinted with additional material as Chapter 20 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P79.** Algorithms. *Scientific American* **236**, 4 (April 1977), 63–66, 69–72, 77–78, 80. Also *Scientific American Offprints*, number 360, 14 pp. Farsi translation by B. Parhami in *Bulletin of the Iranian Mathematical Society* **8** (1978), 122L–76L. French translation, “L’élaboration des algorithmes,” in *L’intelligence de l’informatique* (Paris: Pour La Science, 1984), 75–86. Reprinted with corrections as Chapter 3 of *Selected Papers on Computer Science* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 59–87.
- P80.** (with Andrew C. Yao) The complexity of nonuniform random number generation. In *Algorithms and Complexity*, J. F. Traub, ed. (New York: Academic Press, 1976), 357–428. Russian translation by B. B. Pokhodzei in *Kiberneticheskiĭ Sbornik* **19** (1983), 97–158. Reprinted with additional material as Chapter 34 of *Selected Papers on Analysis of Algorithms* (see under Books).

- P81.** The computer as Master Mind. *Journal of Recreational Mathematics* **9** (1976), 1–6. Reprinted with an addendum as Chapter 25 of *Selected Papers on Fun and Games* (see under Books).
- P82.** Mathematics and Computer Science: Coping with finiteness. *Science* **194** (December 17, 1976), 1235–1242. Reprinted with corrections in *Electronics, the Continuing Revolution*, edited by Philip H. Abelson and Allen L. Hammond, AAAS publication **77-4** (Washington, D.C.: American Association for the Advancement of Science, 1977), 189–196; and in *Mathematics: People, Problems, Results*, ed. by Douglas M. Campbell and John C. Higgins, vol. 2 (Belmont, Calif.: Wadsworth, 1984), 209–222. Bulgarian translation by G. Chobanov and Z. Dokova in *Fiziko-Matematicheskoe Spisanie* **21** (Sofia, 1978), 58–74. German translation by Arthur Engel in *Der Mathematik-Unterricht* **25**, 6 (1979), 5–26. Reprinted with corrections as Chapter 2 of *Selected Papers on Computer Science* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 29–58.
- P83.** (with Luis Trabb Pardo) The early development of programming languages. *Encyclopedia of Computer Science and Technology*, Jack Belzer, Albert G. Holzman, and Allen Kent, eds., **7** (New York: Marcel Dekker, Inc., 1977), 419–493. Reprinted in *A History of Computing in the Twentieth Century*, N. Metropolis, J. Howlett, and G.-C. Rota, eds. (New York: Academic Press, 1980), 197–273. Reprinted with amendments as Chapter 1 of *Selected Papers on Computer Languages* (see under Books). French translation by Patrick Cégielski in *Éléments pour une histoire de l’informatique* (see under Books), 77–178.
- P84.** (with Arne T. Jonassen) A trivial algorithm whose analysis isn’t. *Journal of Computer and System Sciences* **16** (1978), 301–322. Reprinted as Chapter 18 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P85.** A generalization of Dijkstra’s algorithm. *Information Processing Letters* **6** (1977), 1–5. Reprinted with an addendum as Chapter 15 of *Selected Papers on Design of Algorithms* (see under Books).
- P86.** Evaluation of Porter’s constant. *Computers and Mathematics with Applications* **2** (1976), 137–139. Reprinted with additional material as Chapter 12 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P87.** (with Michael S. Paterson) Identities from partition involutions. *Fibonacci Quarterly* **16** (June 1978), 198–212. Reprinted as Chapter 34 of *Selected Papers on Discrete Mathematics* (see under Books).
- P88.** (with Arnold Schönhage) The expected linearity of a simple equivalence algorithm. *Theoretical Computer Science* **6** (1978), 281–315. Reprinted with additional material as Chapter 21 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P89.** Deletions that preserve randomness. *IEEE Transactions on Software Engineering* **SE-3** (1977), 351–359. Reprinted as Chapter 19 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P90.** The average time for carry propagation. *Indagationes Mathematicæ* **40** (1978), 238–242. Reprinted as Chapter 26 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P91.** Mathematical typography. *Bulletin of the American Mathematical Society* (new series) **1** (March 1979), 337–372. Reprinted with corrections as part 1 of *TEX and METAFONT* (see under Books). Also reprinted in *Dr. Dobb’s Journal of Computer Calisthenics & Orthodontia* **5**, 3 (March 1980), 5–20. Reprinted as Chapter 2 of *Digital Typography* (see under Books). Russian translation in *Komp’iuternaia Tipografiia*, 36–78 (see under Books).
- P92.** (with A. V. Anisimov) Inhomogeneous sorting. *International Journal of Computer and Information Sciences* **8** (1979), 255–260. Russian translation in *Programmirovaniie* **5**, 1 (1979), 11–14. English retranslation in *Programming and Computer Software* **5** (1979), 7–10. Reprinted with an addendum as Chapter 6 of *Selected Papers on Design of Algorithms* (see under Books).
- P93.** Lexicographic permutations with restrictions. *Discrete Applied Mathematics* **1** (1979), 117–125. Reprinted with an addendum as Chapter 7 of *Selected Papers on Design of Algorithms* (see under Books).
- P94.** Algorithms in modern mathematics and computer science. *Lecture Notes in Computer Science* **122** (1981), 82–99. Russian translation by G. S. Tsëitin in *Algoritmy v Sovremennoi Matematike i Ee Pri-lozheniia*, Chast’ I (Novosibirsk: Akademiia Nauk SSSR, Sibirskoe Otdeleniie, Vychislitel’nyi Tsentr, 1982), 64–98. Revised version entitled “Algorithmic thinking and mathematical thinking,” *American*

- Mathematical Monthly* **92** (1985), 170–181. Japanese translation in *Kunuusu Sensei no Program-Ron* (see under Books), 22–43. Reprinted with corrections as Chapter 4 of *Selected Papers on Computer Science* (see under Books). French translation by Patrick Cégielski in *Éléments pour une histoire de l'informatique* (see under Books), 21–51.
- P95.** Supernatural numbers. *The Mathematical Gardner*, D. A. Klarner, ed. (Belmont, California: Wadsworth International, 1981), 310–325; reprinted with new title *Mathematical Recreations* (Dover, 1998). Russian translation by Í. A. Danilov in *Matematicheskiĭ tsvetnik*, edited by I. M. Íaglom (Moscow: Mir, 1983), 388–408. Reprinted with an addendum as Chapter 16 of *Selected Papers on Fun and Games* (see under Books).
- P96.** The letter S. *The Mathematical Intelligencer* **2** (1980), 114–122. Reprinted with corrections as Chapter 13 of *Digital Typography* (see under Books). Russian translation in *Komp'Ûternaĭa Tipografiã*, 273–292 (see under Books).
- P97.** Deciphering a linear congruential encryption. *IEEE Transactions on Information Theory* **IT-31** (1985), 49–52. Reprinted with an addendum as Chapter 24 of *Selected Papers on Design of Algorithms* (see under Books).
- P98.** (with Michael F. Plass) Breaking paragraphs into lines. *Software—Practice and Experience* **11** (1981), 1119–1184. Reprinted with corrections as Chapter 3 of *Digital Typography* (see under Books). Russian translation in *Komp'Ûternaĭa Tipografiã*, 79–166 (see under Books). French translation by Patrick Cégielski in *Éléments pour une histoire de l'informatique* (see under Books), 199–295.
- P99.** Verification of link-level protocols. *BIT* **21** (1981), 31–36. Reprinted with an addendum as Chapter 12 of *Selected Papers on Design of Algorithms* (see under Books).
- P100.** The concept of a meta-font. *Visible Language* **16** (1982), 3–27. French translation by M. R. Delorme in *Communication et Langages* no. 55, (1983), 40–53; reprinted in *Typographie et Informatique*, proceedings of INRIA conference held 21–25 January 1985, organized by Jacques André and Patrick Sallio (Rennes, France: INRIA/IRISA – CCETT, 1985), 119–132. Reprinted as Chapter 15 of *Digital Typography* (see under Books). Russian translation in *Komp'Ûternaĭa Tipografiã*, 296–320 (see under Books).
- P101.** Huffman's algorithm via algebra. *Journal of Combinatorial Theory* (A) **32** (1982), 216–224. Russian translation by B. B. Pokhodzeĭ in *Kiberneticheskiĭ Sbornik* **22** (1985), 159–169. Reprinted as Chapter 23 of *Selected Papers on Discrete Mathematics* (see under Books).
- P102.** A permanent inequality. *American Mathematical Monthly* **88** (1981), 731–740, 798. Reprinted as Chapter 6 of *Selected Papers on Discrete Mathematics* (see under Books).
- P103.** Dynamic Huffman coding. *Journal of Algorithms* **6** (1985), 163–180. Reprinted with an addendum as Chapter 5 of *Selected Papers on Design of Algorithms* (see under Books).
- P104.** An analysis of optimum caching. *Journal of Algorithms* **6** (1985), 181–199. Reprinted as Chapter 17 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P105.** (with David R. Fuchs) Optimal prepaging and font caching. *ACM Transactions on Programming Languages and Systems* **7** (1985), 62–79. Reprinted with an addendum as Chapter 14 of *Selected Papers on Design of Algorithms* (see under Books).
- P106.** The distribution of continued fraction approximations. *Journal of Number Theory* **19** (1984), 443–448. Reprinted as Chapter 11 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P107.** An algorithm for Brownian zeroes. *Computing* **33** (1984), 89–94. Reprinted with an addendum as Chapter 21 of *Selected Papers on Design of Algorithms* (see under Books).
- \*P108.** (with Michael F. Plass) Choosing better line breaks. In *Document Preparation Systems*, Nievergelt et al., eds. (Amsterdam: North-Holland, 1982), 221–242.
- P109.** Literate programming. *The Computer Journal* **27** (1984), 97–111. Reprinted with corrections as Chapter 4 of *Literate Programming* (see under Books). Japanese translation by Toshiaki Kurokawa in *bit* **17** (1985), 426–450; reprinted in *Kunuusu Sensei no Program-Ron* (see under Books), 82–128. Japanese translation by Makoto Arisawa in *Bungeiteki Programming* (see under Books), 135–182.

- P110.** Lessons learned from METAFONT. *Visible Language* **19** (1985), 35–53. Reprinted with corrections as Chapter 16 of *Digital Typography* (see under Books). Russian translation in *Komp'ûternaâ Tipografiâ*, 321–343 (see under Books).
- P111.** The toilet paper problem. *American Mathematical Monthly* **91** (1984), 465–470. Reprinted with additional material as Chapter 16 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P112.** The IBM 650: An appreciation from the field. *Annals of the History of Computing* **8** (1986), 50–55. Reprinted with corrections as Chapter 13 of *Selected Papers on Computer Science* (see under Books).
- P113.** Semi-optimal bases for linear dependencies. *Linear and Multilinear Algebra* **17** (1985), 1–4. Reprinted with an addendum as Chapter 22 of *Selected Papers on Design of Algorithms* (see under Books).
- P114.** Efficient balanced codes. *IEEE Transactions on Information Theory* **IT-32** (1986), 51–53. Reprinted in Mario Blaum, *Codes for Detecting and Correcting Unidirectional Errors* (Los Alamitos, California: IEEE Computer Society Press, 1993). Reprinted as Chapter 29 of *Selected Papers on Discrete Mathematics* (see under Books).
- P115.** (with Huang Bing-Chao) A one-way, stackless quicksort algorithm. *BIT* **26** (1986), 127–130. Reprinted with an addendum as Chapter 3 of *Selected Papers on Design of Algorithms* (see under Books).
- P116.** Digital halftones by dot diffusion. *ACM Transactions on Graphics* **6** (1987), 245–273. Reprinted with revisions as Chapter 22 of *Digital Typography* (see under Books). Russian translation in *Komp'ûternaâ Tipografiâ*, 447–468 (see under Books).
- P117.** Fibonacci multiplication. *Applied Mathematics Letters* **1** (1988), 57–60. Reprinted with an addendum as Chapter 13 of *Selected Papers on Fun and Games* (see under Books).
- \*P118.** (with Christos H. Papadimitriou and John N. Tsitsiklis) A note on strategy elimination in bimatrix games. *Operations Research Letters* **7** (1988), 103–107. Errata, see Gilboa et al., *Operations Research Letters* **9** (1990), 85–89.
- P119.** A Fibonacci-like sequence of composite numbers. *Mathematics Magazine* **63** (1990), 21–25. Reprinted with an addendum as Chapter 14 of *Selected Papers on Fun and Games* (see under Books).
- P120.** (with Boris Pittel) A recurrence related to trees. *Proceedings of the American Mathematical Society* **105** (1989), 335–349. Reprinted as Chapter 39 of *Selected Papers on Discrete Mathematics* (see under Books).
- P121.** (with Herbert S. Wilf) The power of a prime that divides a generalized binomial coefficient. *Journal für die reine und angewandte Mathematik* **396** (1989), 212–219. Reprinted as Chapter 36 of *Selected Papers on Discrete Mathematics* (see under Books).
- P122.** (with Philippe Flajolet and Boris Pittel) The first cycles in an evolving graph. *Discrete Mathematics* **75** (1989), 167–215. This volume is also published as *Combinatorics 1988*, Proceedings of the Cambridge Conference in Honour of Paul Erdős, edited by Béla Bollobás (North-Holland, 1989). Reprinted as Chapter 40 of *Selected Papers on Discrete Mathematics* (see under Books).
- P123.** Efficient representation of perm groups. *Combinatorica* **11** (1991), 33–43. Reprinted with an addendum as Chapter 20 of *Selected Papers on Design of Algorithms* (see under Books).
- P124.** The errors of T<sub>E</sub>X. *Software—Practice and Experience* **19** (1989), 607–685. Reprinted with additions and corrections as Chapters 10 and 11 of *Literate Programming* (see under Books). Japanese translation by Makoto Arisawa in *Bungeiteki Programming* (see under Books), 319–425.
- P125.** (with Hermann Zapf) AMS Euler—A new typeface for mathematics. *Scholarly Publishing* **20** (1989), 131–157. Abridged version in *ABC—XYZapf*, edited by John Dreyfus and Knut Erichson (London: Wynkyn de Worde Society, 1989), 171–179. Reprinted with corrections as Chapter 17 of *Digital Typography* (see under Books). Russian translation in *Komp'ûternaâ Tipografiâ*, 344–368 (see under Books).
- P126.** (with Robert W. Floyd) Addition machines. *SIAM Journal on Computing* **19** (1990), 329–340. Reprinted with an addendum as Chapter 10 of *Selected Papers on Design of Algorithms* (see under Books).
- P127.** (with Rajeev Motwani and Boris Pittel) Stable husbands. *Random Structures & Algorithms* **1** (1990), 1–14. Reprinted as Chapter 24 of *Selected Papers on Analysis of Algorithms* (see under Books).



- \*P128. (with Richard Garfield and Herbert S. Wilf) A bijection for ordered factorizations. *Journal of Combinatorial Theory (A)* **54** (1990), 317–318.
- \*P129. (with Herbert S. Wilf) A short proof of Darboux’s lemma. *Applied Mathematics Letters* **2** (1989), 139–140.
- \*P130. (with Leonidas J. Guibas and Micha Sharir) Randomized incremental construction of Delaunay and Voronoi diagrams. *Algorithmica* **7** (1992), 381–413. Abbreviated version in *Automata, Languages and Programming*, edited by M. S. Paterson, *Lecture Notes in Computer Science* **443** (1990), 414–431.
- \*P131. (with Lee Sallows, Martin Gardner, Richard K. Guy) Serial isogons of 90 degrees. *Mathematics Magazine* **64** (1991), 315–324.
- P132. (with Arvind Raghunathan) The problem of compatible representatives. *SIAM Journal on Discrete Mathematics* **5** (1992), 422–427. Reprinted as Chapter 33 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P133. A simple program whose proof isn’t. *Beauty Is Our Business*, edited by W. H. J. Feijen et al., a festschrift for Edsger Dijkstra (Springer, 1990), 233–242. Reprinted with an addendum as Chapter 11 of *Selected Papers on Design of Algorithms* (see under Books).
- P134. Nested satisfiability. *Acta Informatica* **28** (1990), 1–6. Reprinted with an addendum as Chapter 8 of *Selected Papers on Design of Algorithms* (see under Books).
- P135. Textbook examples of recursion. *Artificial Intelligence and Mathematical Theory of Computation*, papers in honor of John McCarthy, edited by Vladimir Lifschitz (Academic Press, 1991), 207–229. Reprinted with additional material as Chapter 22 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P136. A note on digitized angles. *Electronic Publishing—Origination, Dissemination, and Design* **3** (1990), 99–104. Reprinted as Chapter 23 of *Digital Typography* (see under Books). Russian translation in *Komp’ûternaia Tipografiã*, 469–476 (see under Books).
- P137. Two notes on notation. *American Mathematical Monthly* **99** (1992), 403–422; **102** (1995), 562. Reprinted as Chapter 2 of *Selected Papers on Discrete Mathematics* (see under Books).
- P138. Theory and practice. *Theoretical Computer Science* **90** (1991), 1–15. Also published in *Images of Programming*, dedicated to the memory of A. P. Ershov, edited by D. Bjørner and V. Kotov (Amsterdam: North-Holland, 1991), 1–15. Reprinted with corrections as Chapter 9 of *Selected Papers on Computer Science* (see under Books).
- P139. Context-free multilanguages. *Theoretical Studies in Computer Science*, edited by Jeffrey D. Ullman, a festschrift for Seymour Ginsburg (Academic Press, 1992), 1–13. Reprinted as Chapter 16 of *Selected Papers on Computer Languages* (see under Books).
- P140. (with Svante Janson, Tomasz Łuczak, Boris Pittel) The birth of the giant component. *Random Structures & Algorithms* **4** (1993), 233–358. Reprinted as Chapter 41 of *Selected Papers on Discrete Mathematics* (see under Books).
- P141. Convolution polynomials. *Mathematica Journal* **2,4** (Fall 1992), 67–78. Reprinted as Chapter 15 of *Selected Papers on Discrete Mathematics* (see under Books).
- P142. Johann Faulhaber and sums of powers. *Mathematics of Computation* **61** (1993), 277–294. Reprinted as Chapter 4 of *Selected Papers on Discrete Mathematics* (see under Books).
- P143. Bracket notation for the ‘coefficient-of’ operator. *A Classical Mind*, essays in honour of C. A. R. Hoare, edited by A. W. Roscoe (Prentice–Hall, 1994), 247–258. Reprinted as Chapter 3 of *Selected Papers on Discrete Mathematics* (see under Books).
- P144. Mini-indexes for literate programs. *Software—Concepts and Tools* **15** (1994), 2–11. Reprinted as Chapter 11 of *Digital Typography* (see under Books). Russian translation in *Komp’ûternaia Tipografiã*, 235–255 (see under Books).
- P145. Two-way rounding. *SIAM Journal on Discrete Mathematics* **8** (1995), 281–290. Reprinted with an addendum as Chapter 16 of *Selected Papers on Design of Algorithms* (see under Books).

- P146.** (with Inger Johanne Håland) Polynomials involving the floor function. *Mathematica Scandinavica* **76** (1995), 194–200. Reprinted as Chapter 16 of *Selected Papers on Discrete Mathematics* (see under Books).
- P147.** Leaper graphs. *The Mathematical Gazette* **78** (1994), 274–297. Reprinted with an addendum as Chapter 43 of *Selected Papers on Fun and Games* (see under Books).
- P148.** The sandwich theorem. *Electronic Journal of Combinatorics* **1** (1994), article A1, 48 pp. Reprinted as Chapter 8 of *Selected Papers on Discrete Mathematics* (see under Books).
- P149.** An exact analysis of stable allocation. *Journal of Algorithms* **20** (1996), 431–442. Reprinted as Chapter 23 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P150.** Aztec diamonds, checkerboard graphs, and spanning trees. *Journal of Algebraic Combinatorics* **6** (1997), 253–257. Reprinted as Chapter 10 of *Selected Papers on Discrete Mathematics* (see under Books).
- P151.** Irredundant intervals. *ACM Journal of Experimental Algorithmics* **1** (1996), article 1, 19 pp. Reprinted with an addendum as Chapter 18 of *Selected Papers on Design of Algorithms* (see under Books).
- \*P152.** (with David J. Jeffrey, Robert M. Corless, David E. G. Hare) Sur l’inversion de  $y^\alpha e^y$  au moyen de nombres de Stirling associés. *Comptes Rendus de l’Académie des Sciences, série I*, **320** (1995), 1449–1452.
- P153.** Partitioned tensor products and their spectra. *Journal of Algebraic Combinatorics* **6** (1997), 259–267. Reprinted as Chapter 11 of *Selected Papers on Discrete Mathematics* (see under Books).
- P154.** The Knowlton–Graham partition problem. *Journal of Combinatorial Theory (A)* **73** (1996), 185–189. Reprinted as Chapter 30 of *Selected Papers on Discrete Mathematics* (see under Books).
- \*P155.** (with R. M. Corless, G. H. Gonnet, D. E. G. Hare, and D. J. Jeffrey) On the Lambert  $W$  function. *Advances in Computational Mathematics* **5** (1996), 329–359.
- P156.** Overlapping Pfaffians. *Electronic Journal of Combinatorics* **3,2** (1996), paper R5, 13 pp. Reprinted in *The Foata Festschrift*, ed. by Jacques Désarménien, Adalbert Kerber, and Volker Strehl (Gap: Imprimerie Louis-Jean, 1996), 151–163. Reprinted as Chapter 7 of *Selected Papers on Discrete Mathematics* (see under Books).
- P157.** (with Svante Janson) Shellsort with three increments. *Random Structures & Algorithms* **10** (1997), 125–142. Reprinted as Chapter 25 of *Selected Papers on Analysis of Algorithms* (see under Books).
- P158.** Linear probing and graphs. *Algorithmica* **22** (1998), 561–568. Reprinted as Chapter 27 of *Selected Papers on Analysis of Algorithms* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 383–393.
- P159.** Dancing links. *Millennial Perspectives in Computer Science*, edited by Jim Davies, Bill Roscoe, and Jim Woodcock (Houndmills, Basingstoke, Hampshire: Palgrave, 2000), 187–214. Reprinted with an addendum as Chapter 38 of *Selected Papers on Fun and Games* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 239–276.
- P160.** (with Frank Ruskey) Efficient coroutine generation of constrained Gray sequences. *From Object-Oriented to Formal Methods: Dedicated to the Memory of Ole-Johan Dahl*, edited by O. Owe, S. Krogdahl, and T. Lyche, *Lecture Notes in Computer Science* **2635** (Heidelberg: Springer-Verlag, 2004), 183–204. Reprinted as Chapter 25 of *Selected Papers on Computer Languages* (see under Books).
- P161.** (with Fan Chung and Ron Graham) A symmetric Eulerian identity. *Journal of Combinatorics* **1** (2010), 29–38.

#### 4. Other Publications (unrefereed contributions) (\* means written by coauthor or editor)

- \*Q1. (with J. D. Alanen) A table of minimum functions for generating Galois fields  $\text{GF}(p^n)$ . *Sankhyā*, series A, **23** (1961), 128.
- Q2. Backus' language. *Communications of the ACM* **5** (April 1962), 185.
- Q3. The calculation of Easter. *Communications of the ACM* **5** (April 1962), 209–210.
- Q4. Non-Desarguesian planes of order  $2^{2m+1}$ . *Notices of the American Mathematical Society* **9** (June 1962), 218.
- Q5. History of writing compilers. Digest of Technical Papers, *ACM 62 National Conference* (September 1962), 43, 126.
- Q6. Evaluation of polynomials by computer. *Communications of the ACM* **6** (February 1963), 51.
- Q7. Review of *Computer Applications in the Behavioral Sciences*. *Computing Reviews* **4** (May–June 1963), 120–122.
- Q8. Letters on merging. *Communications of the ACM* **6** (October 1963), 585–587.
- Q9. Addition chains and the evaluation of  $n$ th powers. *Notices of the American Mathematical Society* **11** (February 1964), 230–231.
- Q10. Non-Desarguesian planes of order  $2^{2m+1}$ . *Notices of the American Mathematical Society* **11** (June 1964), 445–446.
- Q11. Backus Normal Form vs. Backus Naur Form. *Communications of the ACM* **7** (December 1964), 735–736. Reprinted as Chapter 2 of *Selected Papers on Computer Languages* (see under Books). French translation by Patrick Cégielski in *Éléments pour une histoire de l'informatique* (see under Books), 319–322.
- Q12. Man or boy? *Algol Bulletin* **17** (Amsterdam: Mathematisch Centrum, July 1964) 7; **19** (January 1965), 8–9. Reprinted as Chapter 6 of *Selected Papers on Computer Languages* (see under Books).
- Q13. Teaching ALGOL 60. *Algol Bulletin* **19** (Amsterdam: Mathematisch Centrum, January 1965), 4–6. Reprinted as Chapter 3 of *Selected Papers on Computer Languages* (see under Books).
- Q14. A list of the remaining trouble spots in ALGOL 60. *Algol Bulletin* **19** (Amsterdam: Mathematisch Centrum, January 1965), 29–38.
- Q15. Comments concerning PL/I language specifications as published in the IBM Manual (Form C28-6571-1). *PL/I Bulletin* **1** (January 1966), 5–14.
- Q16. Problem 5264, the triangle inequality and the parallelogram law. *American Mathematical Monthly* **72** (1965), 193; solutions in **73** (1966), 211–212.
- Q17. Additional comments on a problem in concurrent programming control. *Communications of the ACM* **9** (May 1966), 321–322; errata p. 878. Reprinted in *Communications of the ACM* **26** (January 1983), 22. Reprinted with an addendum as Chapter 13 of *Selected Papers on Design of Algorithms* (see under Books).
- Q18. Algorithm and program; information and data. *Communications of the ACM* **9** (September 1966), 654. Reprinted in *Selected Papers on Computer Science* (see under Books), 1–2. French translation by Patrick Cégielski in *Éléments pour une histoire de l'informatique* (see under Books), 315–316.
- Q19. (with R. W. Floyd) Improved constructions for the Bose-Nelson sorting problem. *Notices of the American Mathematical Society* **14** (February 1967), 283, Abstract 67T-228.
- Q20. What is an algorithm? *Datamation* **13**,10 (October 1967), 30–32.
- Q21. Comments on programming languages. *Simulation Programming Languages*, edited by J. N. Buxton (North-Holland, 1968), passim.
- Q22. Evolution of number systems. *Datamation* **15** (February 1969), 93–97; (April 1969), 307, 309; (May 1969), 229. Reprinted with corrections in Elias M. Awad, *Automatic Data Processing* (Prentice-Hall, 1970), 353–357.

- Q23.** Letter to the editor regarding uncrossed Knight's tours. *Journal of Recreational Mathematics* **2** (1969), 155–157. Reprinted with an addendum as Chapter 40 of *Selected Papers on Fun and Games* (see under Books).
- Q24.** (with Edward A. Bender) Constructive enumeration of plane partitions. *Notices of the American Mathematical Society* **16** (June 1969), 659.
- Q25.** Discussion of Mr. Riordan's paper "Abel identities and inverse relations". In *Combinatorial Mathematics and Its Applications*, R. C. Bose and T. A. Dowling, eds., University of North Carolina Monograph Series in Probability and Statistics **4** (Chapel Hill, North Carolina, 1969), 91–94. Reprinted as Chapter 14 of *Selected Papers on Discrete Mathematics* (see under Books).
- Q26.** Review of *Game Playing with Computers*, by Donald D. Spencer. *Journal of Recreational Mathematics* **2** (1969), 237–238.
- Q27.** Review of *Introduction to Combinatorial Mathematics*, by C. L. Liu. *IEEE Transactions on Information Theory* **IT-17** (1971), 119–120.
- Q28.** (with Michael L. Fredman) Recurrence relations based on minimization. *Notices of the American Mathematical Society* **18** (October 1971), 960.
- Q29.** (with Ronald L. Rivest) Bibliography on computer sorting. *Computing Reviews* **13** (June 1972), 283–289.
- Q30.** Sequences with precisely  $k + 1$   $k$ -blocks; Schröder's problem; groups. Solutions to Problems E2307, E2315, E2328. *American Mathematical Monthly* **79** (1972), 773–774, 910, 1138–1139.
- Q31.** The history of sorting. *Datamation* **18** (December 1972), 64, 69–70.
- Q32.** Søkning etter noe i en EDB-maskin. (Norwegian) *Forskningsnytt* **18**, 4 (Norges Almenvitenskapelige Forskningsråd, 1973), 39–42.
- Q33.** A terminological proposal. *SIGACT News* **6**, 1 (January 1974), 12–18. Reprinted as Chapter 28 of *Selected Papers on Analysis of Algorithms* (see under Books). French translation by Patrick Cégielski in *Éléments pour une histoire de l'informatique* (see under Books), 331–339.
- Q34.** (with Ellen Crawford and Leonard Carlitz) Problems submitted as a letter to the editor. *Fibonacci Quarterly* **12** (1974), 46, 79, 82. [Solution to the last problem had essentially been published earlier by David Zeitlin in *Fibonacci Quarterly* **5** (1967), 75.]
- Q35.** Review of *The Origins of Digital Computers*, by Brian Randell. *Historia Mathematica* **1** (1974), 204–207.
- Q36.** Postscript about NP-hard problems. *SIGACT News* **6**, 2 (April 1974), 15–16. Reprinted as Chapter 29 of *Selected Papers on Analysis of Algorithms* (see under Books). French translation by Patrick Cégielski in *Éléments pour une histoire de l'informatique* (see under Books), 341–343.
- Q37.** Elementary Problem E2492 (binomial coefficients and mods). *American Mathematical Monthly* **81** (1974), 902; solution in **82** (1975), 855.
- Q38.** Problem 6049 (cyclic permutation generators). *American Mathematical Monthly* **82** (1975), 856; solution in **84** (1977), 397.
- Q39.** Problem 6050 (random maximization). *American Mathematical Monthly* **82** (1975), 856; solution in **85** (1978), 686–688.
- Q40.** (with Charles T. Zahn Jr.) Ill-chosen use of "event". *Communications of the ACM* **18** (June 1975), 360.
- Q41.** Son of Seminumerical Algorithms. *SIGSAM Bulletin* **9**, 4 (November 1975), 10–11.
- Q42.** Elementary Problem E2613 (compact sets). *American Mathematical Monthly* **83** (1976), 656; solution in **84** (1977), 827–828.
- Q43.** Big Omicron and Big Omega and Big Theta. *SIGACT News* **8**, 2 (April–June 1976), 18–24. Reprinted as Chapter 4 of *Selected Papers on Analysis of Algorithms* (see under Books). French translation by Patrick Cégielski in *Éléments pour une histoire de l'informatique* (see under Books), 323–329.
- Q44.** Felix vs. Rover. *Journal of Recreational Mathematics* **9** (1976), 59–60.

- Q45.** Elementary Problem E2636 (diphages and triphages). *American Mathematical Monthly* **84** (1977), 134; solution in **85** (1978), 385–386.
- Q46.** Are toy problems useful? *Popular Computing* **5**,1 (January 1977), 1, 3–10; **5**,2 (February 1977), 3–7. Reprinted with corrections as Chapter 10 of *Selected Papers on Computer Science* (see under Books). French translation by Patrick Cégielski in *Algorithmes* (see under Books), 89–105.
- Q47.** BCS examination. *The Computer Bulletin* **2**,9 (September 1976), 29.
- Q48.** The complexity of songs. *SIGACT News* **9**,2 (Summer 1977), 17–24. Reprinted in *Communications of the ACM* **27** (April 1984), 344–346; errata (June 1984), 593. Reprinted in *Metafolkloristica*, edited by Franz Kinder and Boaz the Clown (Salt Lake City, Utah 84158-8183: Frank and Boaz, P.O. Box 58183), 63–65. Reprinted in *Humour the Computer*, edited by Andrew Davison (Cambridge, Massachusetts: MIT Press, 1995), 139–145. Russian translation by Andrei B. Makukha, *RSDN Magazine* (2007), #4, 39–40. Reprinted with an addendum as Chapter 6 of *Selected Papers on Fun and Games* (see under Books).
- Q49.** Solution to Problem 76-17, Conway’s “topswaps” shuffle. *SIAM Review* **19** (October 1977), 739–741.
- Q50.** Organ duets. *Music* **12**,1 (January 1978), 6.
- Q51.** Lewis Carroll’s WORD-WARD-WARE-DARE-DAME-GAME. *GAMES* **2**,4 (July 1978), 22–23. Reprinted with an addendum as Chapter 32 of *Selected Papers on Fun and Games* (see under Books).
- Q52.** BLOOD, SWEAT, and TEARS. *GAMES* **2**,4 (July 1978), 49. Reprinted with an addendum as Chapter 33 of *Selected Papers on Fun and Games* (see under Books).
- Q53.** Computer-assisted indexing. *The Indexer* **11** (April 1979), 135.
- Q54.** Disappearances (poem). *The Mathematical Gardner*, D. A. Klarner, ed. (Belmont, California: Wadsworth International, 1981), 264; reprinted with new title *Mathematical Recreations* (Dover, 1998). Reprinted in *Mathematics: A Human Endeavor* by Harold R. Jacobs, third edition (San Francisco: Freeman, 1994), 53. Reprinted in *Kunuuusu Sensei no Program-Ron* (see under Books), 192–193. Russian translation in *Matematicheskii tsvetnik* (Mir, 1983), 329. Reprinted with an addendum as Chapter 31 of *Selected Papers on Fun and Games* (see under Books).
- \***Q55.** Donald E. Knuth speaks out (interview by David H. Ahl). *Creative Computing* **6**,1 (January 1980), 72–75.
- Q56.** Problem 80-6, random 2D trees. *Journal of Algorithms* **1** (1980), 109; solution in **3** (1982), 368–371.
- Q57.** Problem 80-11, inorder depth versus preorder depth. *Journal of Algorithms* **1** (1980), 210.
- Q58.** (with Christos H. Papadimitriou) Duality in addition chains. *Bulletin of the EATCS* **13** (February 1981), 2–4. Reprinted as Chapter 31 of *Selected Papers on Analysis of Algorithms* (see under Books).
- Q59.** Letter to the editor re bubble sort. *Popular Computing* **9**,1 (January 1981), 7.
- Q60.** Penny flipping. *Popular Computing* **9**,4 (April 1981), 10, 12.
- Q61.** Problem 81-10, optimum caching with two page frames. *Journal of Algorithms* **2** (1981), 315.
- \***Q62.** A conversation with Don Knuth (interview by Donald J. Albers and Lynn Arthur Steen). *Two-Year College Mathematics Journal* **13** (1982), 2–18, 128–141. Reprinted in *Annals of the History of Computing* **4** (1982), 257–274. Reprinted in *Mathematical People*, ed. by Donald J. Albers and G. L. Alexanderson (Boston: Birkhäuser Boston, 1985), 182–203. Japanese translation by Nobuko Kishi in *bit* **16** (1985), 370–377, 506–512, 902–906, 1020–1025; reprinted in *Kunuuusu Sensei no Program-Ron* (see under Books), 130–167.
- Q63.** (with A. P. Ershov) Editors’ foreword to the proceedings of a conference on “Algorithms in Modern Mathematics and Computer Science,” Urgench, Uzbek SSR, September 16–22, 1979. *Lecture Notes in Computer Science* **122** (1981), iii–v. Russian translation in *Algoritmy v sovremennoi matematike i ee prilozheniakh*, Chast’ I (Novosibirsk: Akademiia Nauk SSSR, Sibirskoe Otdelenie, Vychislitel’nyi Tsentr, 1982), 4–7.
- Q64.** Problem 82-3, late binding trees. *Journal of Algorithms* **3** (1982), 178–180; solution in **4** (1983), 385–393.
- Q65.** (with R. L. Graham) Elementary problem E2982, a double infinite sum for  $|x|$ . *American Mathematical Monthly* **90** (1983), 54; solution in **96** (1989), 525–526.

- Q66.** Fixed-point glue setting: An example of WEB. *TUGboat* **3**,1 (March 1982), 10–27. Errata, *TUGboat* **12**,2 (June 1991), 313.
- Q67.** A reply from the author. *Visible Language* **16** (1982), 358–359. [A response to 16 reviews of paper P100; the reviews appear on pp. 308–358.] Also *Visible Language* **17** (1983), 417. Reprinted in the addendum to Chapter 15 of *Digital Typography* (see under Books). Russian translation in *Komp'ûternaîa Tipografiâ*, 318–319 (see under Books).
- Q68.** Review of *History of Binary and other Nondecimal Numeration*, by Anton Glaser. *Historia Mathematica* **10** (1983), 236–243. Partially reprinted as Chapter 5 of *Selected Papers on Discrete Mathematics* (see under Books).
- Q69.** T<sub>E</sub>X incunabula. *TUGboat* **5**,1 (May 1984), 4–11. Reprinted as Chapter 26 of *Digital Typography* (see under Books). Russian translation in *Komp'ûternaîa Tipografiâ*, 506–538 (see under Books).
- Q70.** My first experience with Indian scripts. *CALTIS-84*, a conference on calligraphy, lettering, typography of Indic scripts (New Delhi: February 11–13, 1984), 49. Reprinted as Chapter 14 of *Digital Typography* (see under Books). Russian translation in *Komp'ûternaîa Tipografiâ*, 293–295 (see under Books).
- Q71.** Solution to Problem 83-3, a binomial double sum involving max. *SIAM Review* **26** (1984), 123–124.
- Q72.** Letter to the editor: Comments on quality in publishing. *TUGboat* **5**,1 (May 1984), 67.
- Q73.** FORTRAN implementations (letter). *Annals of the History of Computing* **6** (October 1984), 402–403.
- Q74.** A course on METAFONT programming. *TUGboat* **5**,2 (November 1984), 105–118. Reprinted as Chapter 19 of *Digital Typography* (see under Books). Russian translation in *Komp'ûternaîa Tipografiâ*, 381–392 (see under Books).
- Q75.** Recipes and fractions. *TUGboat* **6**,1 (March, 1985), 36–38. Reprinted as Chapter 5 of *Digital Typography* (see under Books). Russian translation in *Komp'ûternaîa Tipografiâ*, 187–181 (see under Books).
- \*Q76.** (with Niklaus Wirth) Programming philosophy (interviews by Ken Takara). *Computer Language* **2**,5 (May 1985), cover, 25–35.
- Q77.** Problem 1234: Sorted integers. *Mathematics Magazine* **59** (1986), 44; solution in **60** (1987), 46–48.
- \*Q78.** (with Jon Bentley) Programming Pearls: A WEB program for sampling. *Communications of the ACM* **29**,5 (May 1986), 364–369. Reprinted as Chapter 5 of *Literate Programming* (see under Books). Japanese translation by Makoto Arisawa in *Bungeiteki Programming* (see under Books), 183–198.
- \*Q79.** (with Jon Bentley and M. Douglas McIlroy) Programming Pearls: A WEB program for common words. *Communications of the ACM* **29**,6 (June 1986), 471–483. Reprinted as Chapter 6 of *Literate Programming* (see under Books). Japanese translation by Makoto Arisawa in *Bungeiteki Programming* (see under Books), 199–233.
- Q80.** Solution to problem 6480, A Catalanian sum. *American Mathematical Monthly* **93** (1986), 220.
- Q81.** Problem 86-2, a random knockout tournament (with solution). *SIAM Review* **29** (1987), 127–129.
- Q82.** Theory and practice. *Bulletin of the EATCS* **27** (October 1985), 14–21. Greek translation by N. Kasi-mátis in *Mathimatikí Epitheórissi* (Bulletin of Greek Mathematical Society) teúkhos 30 (1986), 3–15. Reprinted with corrections as Chapter 7 of *Selected Papers on Computer Science* (see under Books).
- Q83.** Problem E3106, A curious sum for Euler's totient function. *American Mathematical Monthly* **92** (1985), 590; solution in **94** (1987), 795–797.
- Q84.** Foreword to *The Kermit File Transfer Protocol* by Frank da Cruz (Bedford, Mass.: Digital Press, 1987), p. xi.
- \*Q85.** (interview by G. Michael Vose and Gregg Williams) Text Processing: Computer Science considerations. *Byte* **11**,2 (February 1986), 169–172.
- Q86.** Remarks to celebrate the publication of *Computers & Typesetting*. *TUGboat* **7** (1986), 95–98. Reprinted as Chapter 28 of *Digital Typography* (see under Books).
- Q87.** Solution to problem E3061, Empty cells. *American Mathematical Monthly* **94** (1987), 189.

- Q88.** (with Pierre MacKay) Mixing right-to-left texts with left-to-right texts. *TUGboat* **8** (1987), 14–25. Reprinted as Chapter 4 of *Digital Typography* (see under Books). Russian translation in *Komp'ÛternaÏa TipografiÏa*, 167–186 (see under Books).
- Q89.** Solution to problem E3062, A versatile identity. *American Mathematical Monthly* **94** (1987), 376–377.
- Q90.** The T<sub>E</sub>X logo in various fonts. *TUGboat* **7** (1986), 101. Reprinted as Chapter 6 of *Digital Typography* (see under Books). Russian translation in *Komp'ÛternaÏa TipografiÏa*, 192–193 (see under Books).
- Q91.** Macros for Jill. *TUGboat* **8** (1987), 309–314. Reprinted as Chapter 8 of *Digital Typography* (see under Books). Russian translation in *Komp'ÛternaÏa TipografiÏa*, 196–204 (see under Books).
- Q92.** Problem for a Saturday morning. *TUGboat* **8** (1987), 73, 210. Reprinted as Chapter 9 of *Digital Typography* (see under Books). Russian translation in *Komp'ÛternaÏa TipografiÏa*, 205–206 (see under Books).
- Q93.** Fonts for digital halftones. *TUGboat* **8** (1987), 135–160. Reprinted with revisions as Chapter 21 of *Digital Typography* (see under Books). Russian translation in *Komp'ÛternaÏa TipografiÏa*, 415–446 (see under Books).
- Q94.** A punk meta-font. *TUGboat* **9** (1988), 152–168. Reprinted as Chapter 20 of *Digital Typography* (see under Books). Russian translation in *Komp'ÛternaÏa TipografiÏa*, 393–414 (see under Books).
- Q95.** Response to the Steele Prize. *Notices of the Amer. Math. Soc.* **34** (1987), 227–228.
- Q96.** Exercises for T<sub>E</sub>X: *The Program*. *TUGboat* **11** (1990), 165–170, 499–511. Reprinted as Chapter 10 of *Digital Typography* (see under Books). Russian translation in *Komp'ÛternaÏa TipografiÏa*, 207–234 (see under Books).
- Q97.** The difference between art and science. *Reader's Digest* (July 1987), 24. [Quoted from the profile by Schechter in *Discover* magazine, page 75.]
- Q98.** Printing out selected pages. *TUGboat* **8** (1987), 217. Reprinted as Chapter 7 of *Digital Typography* (see under Books). Russian translation in *Komp'ÛternaÏa TipografiÏa*, 194–195 (see under Books).
- Q99.** N-ciphered texts. *Word Ways* **20** (1987), 173–174, 191–192. Reprinted with an addendum as Chapter 30 of *Selected Papers on Fun and Games* (see under Books).
- Q100.** Solution to problem E3166, A polynomial identity. *American Mathematical Monthly* **95** (1988), 662–663.
- Q101.** Problem 1280: A sum of floors. *Mathematics Magazine* **60** (1987), 329; solution in **61** (1988), 319–320.
- Q102.** Algorithmic themes. *A Century of Mathematics in America*, Peter L. Duren, ed., **1** (Providence, R.I.: American Mathematical Society, 1988), 439–445. Reprinted with corrections as Chapter 5 of *Selected Papers on Computer Science* (see under Books).
- Q103.** Preface to *Mathematical Circus* by Martin Gardner, MAA Spectrum edition (Washington, D.C.: Mathematical Association of America, 1992), xi–xii.
- Q104.** Notes on the errors of T<sub>E</sub>X. *TUGboat* **10** (1989), 529–531. Revised version, entitled “Learning from our errors,” in *Software Development and Reality Construction*, edited by Christiane Floyd, Heinz Züllighoven, Reinhard Budde, and Reinhard Keil-Slawik (Berlin: Springer-Verlag, 1992), 28–30.
- Q105.** (with Barry Hayes and Carlos Subi) Elementary problem E3267, a solitaire game. *American Mathematical Monthly* **95** (1988), 456–457; solution in **100** (1993), 292–294.
- Q106.** (with Ilan Vardi) Advanced problem 6581, the asymptotic expansion of the middle binomial coefficient. *American Mathematical Monthly* **95** (1988), 774. Solution, *American Mathematical Monthly* **97** (1990), 629–630.
- Q107.** Typesetting concrete mathematics. *TUGboat* **10** (1989), 31–36; errata, p. 342. Reprinted as Chapter 18 of *Digital Typography* (see under Books). Russian translation in *Komp'ÛternaÏa TipografiÏa*, 369–380 (see under Books).
- \*Q108.** (with Jill C. Knuth) T<sub>E</sub>X. *Encyclopedia of Computer Science*, third edition, edited by Anthony Ralston and Edwin D. Reilly (New York: Van Nostrand Reinhold, 1993), 1353–1355. Fourth edition, edited by Anthony Ralston, Edwin D. Reilly, and David Hemmendinger (London: Nature Publishing Group, 2000),

- 1756–1759. *Concise Encyclopedia of Computer Science*, edited by Edwin D. Reilly (Chichester: John Wiley & Sons, 2004), 749–751.
- \***Q109.** (with Jill C. Knuth) METAFONT. *Encyclopedia of Computer Science*, third edition, edited by Anthony Ralston and Edwin D. Reilly (New York: Van Nostrand Reinhold, 1993), 869–870. Fourth edition, edited by Anthony Ralston, Edwin D. Reilly, and David Hemmendinger (London: Nature Publishing Group, 2000), 1154–1155.
- Q110.** Elementary problem E3335, a deranged recurrence. *American Mathematical Monthly* **96** (1989), 525; solution in **97** (1990), 927.
- Q111.** Solution to problem 6575, an identity involving sums and products. *American Mathematical Monthly* **97** (1990), 256.
- Q112.** The new versions of T<sub>E</sub>X and METAFONT. *TUGboat* **10** (1989), 325–328. Erratum, *TUGboat* **11** (1990), 12. Reprinted in *Die T<sub>E</sub>Xnische Komödie* **2**, 1 (March 1990), 16–22. French translation by Alain Cousquer, “T<sub>E</sub>X 3.0 ou le T<sub>E</sub>X nouveau va arriver,” *Cahiers GUTenberg*, n° 4 (December 1989), 39–45. Russian translation in *Komp’iuternaia Tipografiia*, 567–575 (see under Books). Reprinted as Chapter 29 of *Digital Typography* (see under Books).
- Q113.** Virtual fonts: More fun for Grand Wizards. *TUGboat* **11** (1990), 13–23. Reprinted as Chapter 12 of *Digital Typography* (see under Books). Russian translation in *Komp’iuternaia Tipografiia*, 256–272 (see under Books).
- Q114.** The genesis of attribute grammars. *Lecture Notes in Computer Science* **461** (1990), 1–12. Reprinted as Chapter 19 of *Selected Papers on Computer Languages* (see under Books). French translation by Patrick Cégielski in *Éléments pour une histoire de l’informatique* (see under Books), 297–314.
- Q115.** Memories of Andrei Ershov. *Programirovanie* **16**, 1 (1990), 113–114. Russian translation in *Andreĭ Petrovich Ershov – ychenyi i chelovek* (Novosibirsk: Siberian branch, Russian Academy of Science, 2006), 263–265. (Several letters from Knuth to Ershov and vice-versa, from 1970, 1976, 1977, and 1978, are also translated in this volume.)
- Q116.** Solution to Problem 79-5, Asymptotic behavior of a sequence. *SIAM Review* **22** (1980), 101–102.
- Q117.** Arthur Lee Samuel. *TUGboat* **11** (1990), 497–498.
- Q118.** The future of T<sub>E</sub>X and METAFONT. *TUGboat* **11** (1990), 489. Reprinted in *Nederlandstalige T<sub>E</sub>X Gebruikersgroep MAPS* **90.2** (May 1990), 145. Reprinted in *T<sub>E</sub>Xline* **12** (London: December 1990), 1. Reprinted in *Die T<sub>E</sub>Xnische Komödie* **2**, 4 (December 1990), 23–25. French translation by Éric Picheral, “L’avenir de T<sub>E</sub>X et de METAFONT,” *Cahiers GUTenberg*, N° 8 (March 1991), 1–2. Russian translation in *Komp’iuternaia Tipografiia*, 576–577 (see under Books). Reprinted as Chapter 30 of *Digital Typography* (see under Books). Reprinted in *T<sub>E</sub>X’s 2<sup>5</sup> Anniversary: A Commemorative Collection*, edited by Karl Berry and David Walden (Portland, Oregon: T<sub>E</sub>X Users Group, 2010), 8–11.
- Q119.** (with Boris Pittel) Elementary problem E3411, two sums over compositions. *American Mathematical Monthly* **97** (1990), 916–917; solution in **99** (1992), 578–579.
- Q120.** Elementary problem E3303, a binary summation. *American Mathematical Monthly* **96** (1989), 54. Solution, *American Mathematical Monthly* **97** (1990), 348–349.
- Q121.** Elementary problem E3309, a binomial coefficient inequality. *American Mathematical Monthly* **96** (1989), 154; solution in **97** (1990), 614.
- Q122.** (with Philippe Flajolet) Elementary problem E3415, a hypergenerating function. *American Mathematical Monthly* **98** (1991), 54; solution in **100** (1993), 84–85.
- Q123.** Advanced problem 6649, a generalized gamma function with independent branches. *American Mathematical Monthly* **98** (1991), 168; solution in **101** (1994), 77–78.
- Q124.** (with John McCarthy) Elementary problem E3429, small pills. *American Mathematical Monthly* **98** (1991), 264; solution in **99** (1992), 684.
- Q125.** Elementary problem E3463, points in a circle. *American Mathematical Monthly* **98** (1991), 852; solution in **100** (1993), 693–694.



- Q126.** Computer programming and computer science. *Academic Press Dictionary of Science and Technology* (Harcourt Brace Jovanovich, 1992), 490. Reprinted with corrections in *Selected Papers on Computer Science* (see under Books), 2–3. French translation by Patrick Cégielski in *Éléments pour une histoire de l'informatique* (see under Books), 317–318.
- Q127.** (with Lee Sallows) Problem 1296, Universal magic squares. *Journal of Recreational Mathematics* **16** (1984), 138; solution in **17** (1985), 145–146.
- Q128.** Introduction to *New Book of Puzzles* by Jerry Slocum and Jack Botermans (New York: W. H. Freeman, 1992), 6–7.
- Q129.** An interview with Donald Knuth (by Roswitha Graham and Barbara Beeton). *TUGboat* **13** (1992), 419–425.
- Q130.** Icons for T<sub>E</sub>X and METAFONT. *TUGboat* **14** (1993), 387–389. Reprinted as Chapter 27 of *Digital Typography* (see under Books). Russian translation in *Komp'ûternaâ Tipografiâ*, 539–551 (see under Books).
- Q131.**  $5 \times 5 \times 5$  word cubes by computer. *Word Ways* **26** (1993), 95–97. Reprinted with an addendum as Chapter 37 of *Selected Papers on Fun and Games* (see under Books).
- Q132.** The Stanford GraphBase: A platform for combinatorial algorithms. *Proceedings of the Fourth Annual ACM–SIAM Symposium on Discrete Algorithms* (1993), 41–43.
- Q133.** This Week's Citation Classic: Artistic programming. *Current Contents*, Physical, Chemical & Earth Sciences **33**, 34 (August 23, 1993), 8; also *Current Contents*, Engineering, Technology & Applied Sciences **24**, 34 (August 23, 1993), 8. Reprinted as Chapter 14 of *Selected Papers on Computer Science* (see under Books); in the first two printings it was, however, called Chapter 15.
- Q134.** (with John Hershberger) Problem 85-3, on merging sequences. *Journal of Algorithms* **6** (1985), 284.
- Q135.** Problem 90-1, reversing the transformation from sequential representation to short codes for adjacency lists for undirected graphs. *Journal of Algorithms* **12** (1991), 183–184.
- Q136.** Problem 10280, a random binary operation. *American Mathematical Monthly* **100** (1993), 76; solution in **102** (1995), 561–562.
- Q137.** Problem 10298, a divisibility property of Stirling numbers. *American Mathematical Monthly* **100** (1993), 400; solution in **103** (1996), 80–81.
- Q138.** Problem 10401, a knight's surprise. *American Mathematical Monthly* **101** (1994), 682–683; solution in **104** (1997), 669.
- \*Q139.** ETAOIN SHRDLU non-crashing sets. *Word Ways* **27** (1994), 138. Reprinted with an addendum as Chapter 35 of *Selected Papers on Fun and Games* (see under Books).
- Q140.** Speech upon receiving honorary degree from St. Petersburg University. *Programming and Computer Software* **20** (1994), 290. Russian translation by B. B. Pokhodzeï, *Programmirovanië* **20**, 6 (1994), 89–91. Reprinted as Chapter 15 of *Selected Papers on Computer Science* (see under Books), but not in the first two printings of that volume.
- Q141.** Foreword to *An Introduction to the Analysis of Algorithms* by Robert Sedgewick and Philippe Flajolet (Reading, Mass.: Addison–Wesley, 1995), v.
- Q142.** The Chinese domino challenge. *Math Horizons* (April 1995), 8–9.
- \*Q143.** (with Nob Yoshigahara) Pentagon puzzle (Japanese). *Quark Visual Science Magazine*, No. 156 (Tokyo: Kodansha, June 1995), 127.
- Q144.** Predictions for the year 2000, on programming. *Byte* **20**, 9 (September 1995), 110.
- Q145.** Foreword to  $A = B$  by Marko Petkovšek, Herbert S. Wilf, and Doron Zeilberger (A K Peters, 1996), ix.
- Q146.** Open letter to coordinators of T<sub>E</sub>X implementations, 13 October 1981. *TUGboat* **2**, 3 (November 1981), 5–6. Reprinted in *T<sub>E</sub>X's 2<sup>5</sup> Anniversary: A Commemorative Collection*, edited by Karl Berry and David Walden (Portland, Oregon: T<sub>E</sub>X Users Group, 2010), 4–7.
- Q147.** A note on hyphenation. *TUGboat* **4** (1983), 64.
- Q148.** It happened. *TUGboat* **8** (1987), 6.

- Q149.** The initial reception of *Concrete Mathematics*. *SIGACT News* **20**, 1 (Winter 1989), 48.
- Q150.** The Samson–Mueller (Davis–Putnam) algorithm. *SIGACT News* **9**, 1 (January–March 1977), 8–9.
- Q151.** Problem 10470, minimal covers. *American Mathematical Monthly* **102** (1995), 655; solution in **105** (1998), 771–773.
- Q152.** Problem 1479, a recursive optimization. *Mathematics Magazine* **68** (1995), 306; solution in **69** (1996), 305–307.
- Q153.** TUG’95 Questions and answers with Prof. Donald E. Knuth (edited by Christina Thiele) *TUGboat* **17** (1996), 7–22. Reprinted in *GUST* **8** (1997), 9–23. Reprinted as Chapter 31 of *Digital Typography* (see under Books). Russian translation in *Komp’ûternaîâ Tipografiâ*, 578–603 (see under Books).
- Q154.** An interview with Donald Knuth (by Jack Woehr). *Dr. Dobb’s Journal* **21**, 4 (April 1996), 16–18, 20, 22.
- Q155.** Knuth meets NTG members (edited by Christina Thiele). *MAPS: Minutes and Appendices* **16** (Nederlandstalige T<sub>E</sub>X Gebruikersgroep, 1996), 38–49. Reprinted in *TUGboat* **17** (1996), 342–355. Reprinted as Chapter 33 of *Digital Typography* (see under Books). Russian translation in *Komp’ûternaîâ Tipografiâ*, 625–650 (see under Books).
- Q156.** Questions and answers at Charles University (edited by Barbara Beeton and Christina Thiele). *TUGboat* **17** (1996), 355–367. Reprinted as Chapter 32 of *Digital Typography* (see under Books). Russian translation in *Komp’ûternaîâ Tipografiâ*, 604–624 (see under Books).
- Q157.** Problem 10546, binomial coefficient parity. *American Mathematical Monthly* **103** (1996), 695; solution in **105** (1998), 867–868.
- Q158.** Problem 10568, subtracting square roots repeatedly. *American Mathematical Monthly* **104** (1997), 68; solution in **106** (1999), 167.
- Q159.** Problem 10576, a card-matching game. *American Mathematical Monthly* **104** (1997), 169; solution in **106** (1999), 168–169.
- Q160.** Problem 97-6, A sum over binary sequences. *SIAM Review* **39** (1997), 317; solution in **40** (1998), 372–374.
- Q161.** Crystallization of algorithms: The Art of Computer Programming. [Interview by Makoto Nagao; in Japanese.] *Computer Today* no. 77 (January 1997), 46–51.
- Q162.** Concerns about American technology policy. [Interview by Hisayasu Yoshizawa; in Japanese.] *Nikkei Electronics* no. 683 (24 February 1997), 145–148.
- Q163.** Dr. Knuth meets Mitsumasa Anno. [Discussion between Mitsumasa Anno, Donald E. Knuth, and Akihiro Nozaki; in Japanese.] *Sugaku Seminar* **36**, 3 (March 1997), 40–44.
- Q164.** Roundtable discussion with Prof. Knuth. [Discussion between Makoto Arisawa, Toshiaki Kurokawa, Nobuko Kishi, and Donald E. Knuth, with additional comments by Jill C. Knuth; in Japanese.] *bit* **29**, 4 (April 1997), 46–51.
- Q165.** Opinion: Harmony between theory and practice. [In Japanese.] *bit* **29**, 5 (May 1997), 3.
- \*Q166.** (with R. M. Corless and D. J. Jeffrey) A sequence of series for the Lambert  $W$  function. *Proceedings of the International Symposium on Symbolic and Algebraic Computation ISSAC ’97* (ACM Press, 1997), 197–204.
- Q167.** Problem 1534, sums of ceilings of floors. *Mathematics Magazine* **70** (1997), 381; solution in **71** (1998), 390–391.
- Q168.** Problem 1539, a sharp tail inequality. *Mathematics Magazine* **71** (1998), 66; solution in **72** (1999), 65–66.
- Q169.** Problem 10593, matrices related to universal hashing. *American Mathematical Monthly* **104** (1997), 456; solution in **106** (1999), 473–474.
- Q170.** Problem 10609, a partial Abelian sum. *American Mathematical Monthly* **104** (1997), 664; solution in **106** (1999), 690–691.

- Q171.** Letter to the editor: Teach calculus with Big  $O$ . *Notices of the American Mathematical Society* **45**, 6 (June/July 1998), 687–688.
- Q172.** Biblical ladders. *The Mathemagician and Pied Puzzler*, edited by Elwyn Berlekamp and Tom Rodgers (Wellesley, Mass.: A K Peters, 1999), 29–34. Reprinted with an addendum as Chapter 34 of *Selected Papers on Fun and Games* (see under Books).
- Q173.** An interview with Donald Knuth: “A little bit of your soul in it,” (interview by John Boe). *Writing on the Edge* **9** (1998), 10–25.
- Q174.** Solution to problem 10424, a sum of Ira Gessel. *American Mathematical Monthly* **104** (1997), 467.
- Q175.** An interview with Donald Knuth: Computer scientist addresses grand themes (by David I. Lewin). *Computers in Physics* **9** (1995), 248–249.
- Q176.** Solution to problem 97-19, three binomial convolutions. *SIAM Review* **40** (1998), 991.
- Q177.** (with Vaughan Pratt) Problem 10689, an algebraic definition of the real numbers. *American Mathematical Monthly* **105** (1998), 769; solution in **107** (2000), 755.
- Q178.** Problem 10691, highly variable lists. *American Mathematical Monthly* **105** (1998), 859; solution in **110** (2003), 59–60.
- Q179.** (with P. Spirakis, C. Papadimitriou, and others) HERCMA 2001 — Round table discussion. In *Hellenic European Research on Computer Mathematics and Its Applications (HERCMA 2001)*, edited by Elias A. Lipitakis (Athens: LEA, 2002), 910–923.
- Q180.** Problem 10720, exploring all binary mazes. *American Mathematical Monthly* **106** (1999), 264; solution in **110** (2003), 60–61.
- Q181.** Problem 10726, explosive growth. *American Mathematical Monthly* **106** (1999), 362; solution in **107** (2000), 469–470.
- Q182.** (with Robert W. Floyd) Problem H-94, golden hashing. *Fibonacci Quarterly* **4** (1966), 258. [The results stated in this problem are equivalent to what was later called “Fibonacci hashing” in *The Art of Computer Programming* **3**.]
- Q183.** Problem 10832, the reciprocals of Stirling’s errors. *American Mathematical Monthly* **107** (2000), 863; solution in **108** (2001), 877–878.
- Q184.** Interview: Donald E. Knuth (by Raph Levien). *TUGboat* **21** (2000), 103–110. Reprinted from the original online version, <http://www.advogato.org/article/28.html>.
- Q185.** Problem 10858, Fibonacci sequences with complex twists. *American Mathematical Monthly* **108** (2001), 271; solution in **111** (2004), 166–167, 922.
- Q186.** Problem 1621, Fibonacci numbers from binomial coefficients. *Mathematics Magazine* **74** (2001), 154; solution in **75** (2002), 149–150.
- Q187.** Problem 10871, balanced neighborhood squares. *American Mathematical Monthly* **108** (2001), 372; solution in **110** (2003), 161–162.
- Q188.** Problem 10875, animals in a cage. *American Mathematical Monthly* **108** (2001), 469; solution in **110** (2003), 243–245.
- Q189.** All questions answered (edited by Allyn Jackson). [Transcript of a lecture at the Technical University of Munich, 5 October 2001.] *Notices of the American Mathematical Society* **49**, 3 (March 2002), 318–324. Reprinted in *Mathematics Newsletter* **12** (Ramanujan Mathematical Society, 2002), 33–42.
- Q190.** Problem 10906, recounting the rationals. *American Mathematical Monthly* **108** (2001), 872; solution in **110** (2003), 642–643.
- Q191.** (with O. P. Lossers) Solution to problem 10757, generalized quotients of continued fractions. *American Mathematical Monthly* **108** (2001), 875.
- Q192.** Problem 10913, related transpositions with different periods. *American Mathematical Monthly* **108** (2001), 977; solution in **110** (2003), 844–845.
- Q193.** Knuth comments on code. *Byte* **21**, 9 (September 1996), 40.

- Q194.** Der Perfektionist (interview by Harald Bögeholz and Andreas Stiller). *c't magazin für computer technik* 2002,5 (25 February–10 March 2002), 190–193.
- Q195.** ‘Geleitwort’ to *Das MMIX-Buch* by Heidi Anlauff, Axel Böttcher, and Martin Ruckert (Berlin: Springer, 2002), v–vi.
- Q196.** U.K. TUG, Oxford, Sunday, 12 September 1999, question & answer session with Donald Knuth. *TUGboat* 22 (2001), 15–19. Reprinted in *TeX’s 2<sup>5</sup> Anniversary: A Commemorative Collection*, edited by Karl Berry and David Walden (Portland, Oregon: TeX Users Group, 2010), 12–19.
- Q197.** All questions answered. [Transcript of a lecture at the University of Oslo, 30 August 2002.] *TUGboat* 23 (2002), 249–261.
- Q198.** Solution to problem 10825, A Fibonacci–Lucas extremum. *American Mathematical Monthly* 109 (2002), 762–763.
- Q199.** Problem 10985, Some Bernstein polynomials. *American Mathematical Monthly* 110 (2003), 58; solution in 111 (2004), 447, 922.
- Q200.** Problem 11021, a modular triple. *American Mathematical Monthly* 110 (2003), 542, 963; solution in 112 (2005), 279–280.
- Q201.** Robert W Floyd, in memoriam. *SIGACT News* 34, 4 (December 2003), 3–13. Reprinted in *IEEE Annals of the History of Computing* 26, 2 (April–June 2004), 75–83. Reprinted with an addendum as Chapter 1 of *Selected Papers on Design of Algorithms* (see under Books).
- Q202.** (with David S. Johnson and Zvi Galil) Changes at the *Journal of Algorithms*. *SIGACT News* 35, 1 (March 2004), 85.
- Q203.** Problem 11078, cube-free sums. *American Mathematical Monthly* 111 (2004), 361; solution in 113 (2006), 368–369.
- Q204.** Three Catalan bijections. *Institut Mittag-Leffler Reports*, No. 04, 2004/2005, Spring (2005), 19pp.
- Q205.** Problem 11142, Largest weighted Stirling numbers. *American Mathematical Monthly* 112 (2005), 273–274; solution in 114 (2007), 361–362.
- Q206.** Problem 11151, Affinity groups at a roundtable. *American Mathematical Monthly* 112 (2005), 367; solution in 114 (2007), 265–266.
- Q207.** Problem 1721, Fibonacci graphs. *Mathematics Magazine* 78 (2005), 239; solution in 79 (2006), 219–220.
- Q208.** Searching graphs (a brainteaser). *ACM Transactions on Algorithms* 1 (2005), 158–159; solution in 2 (2006), 132–133.
- Q209.** Alphametic 2621: Table setting. *Journal of Recreational Mathematics* 33 (2004–2005), 67; solution in 34 (2005–2006), 59–60.
- Q210.** Mathematical vanity plates. Excerpted in *The Mathematical Intelligencer* 33, 1 (Spring 2011), 33–45. Unabridged version in Chapter 17 of *Selected Papers on Fun and Games* (see under Books).
- Q211.** Problem 11243, Perfect parity patterns. *American Mathematical Monthly* 113 (2006), 759; solution in 115 (2008), 668–670.
- Q212.** Problem 11264,  $d$ -swaps. *American Mathematical Monthly* 114 (2007), 77; solution in 116 (2009), 277–278.
- Q213.** Problem 11274, Binomial coefficients and powers of 2. *American Mathematical Monthly* 114 (2007), 165; solution in 116 (2009), 548–549.
- Q214.** TeX’s infinite glue is projective. *TUGboat* 28 (2007), 4.
- Q215.** The ‘Art’ of being Donald Knuth (extracted from the oral history transcripts at the Computer History Museum by Len Shustek). *Communications of the ACM* 51, 7 (July 2008), 35–39.
- Q216.** Donald Knuth: A life’s work interrupted (extracted from the oral history transcripts at the Computer History Museum by Len Shustek). *Communications of the ACM* 51, 8 (August 2008), 31–35.
- Q217.** Problem 11320, a recurrence involving maxima. *American Mathematical Monthly* 114 (2007), 835; solution in 116 (2009), 649.

- Q218.** Problem 11336, near de-Bruijn cycles. *American Mathematical Monthly* **115** (2008), 71; solution in **116** (2009), 848–849.
- Q219.** Problem 11369, an exponential inequality. *American Mathematical Monthly* **115** (2008), 567; solution in **117** (2010), 377.
- Q220.** The T<sub>E</sub>X tuneup of 2008. *TUGboat* **29** (2008), 233–238. Reprinted in *T<sub>E</sub>X’s 2<sup>5</sup> Anniversary: A Commemorative Collection*, edited by Karl Berry and David Walden (Portland, Oregon: T<sub>E</sub>X Users Group, 2010), 20–29.
- Q221.** Alphametic 2651: Two ways to eighteen. *Journal of Recreational Mathematics* **33** (2004–2005), 221; solution in **34** (2005–2006), 218.
- Q222.** Alphametic 2683: Spice of life. *Journal of Recreational Mathematics* **34** (2005–2006), 141; solution in **35** (2006), 152.
- Q223.** Move it or lose it (with commentary by John Beasley). *Variant Chess* **8** (2009), 96. Reprinted with an addendum as Chapter 26 of *Selected Papers on Fun and Games* (see under Books).
- Q224.** Latin square word puzzles. *Word Ways* **42** (2009), 248. Solutions in *Word Ways* **43** (2010), 14. Reprinted with an addendum as Chapter 36 of *Selected Papers on Fun and Games* (see under Books).
- Q225.** Donald Knuth: Geek of the Week (interview by Richard Morris, 26 November 2009: <http://www.simple-talk.com/opinion/geek-of-the-week/donald-knuth-geek-of-the-week/>).
- Q226.** Problem 11452, permutation flipping. *American Mathematical Monthly* **116** (2009), 648; solution in **118** (2011), 657.
- Q227.** An earthshaking announcement. *TUGboat* **31** (2010), 121–124. Reprinted with an addendum as Chapter 49 of *Selected Papers on Fun and Games* (see under Books).
- Q228.** Memories of Martin Gardner. *Notices of the American Mathematical Society* **58**, 3 (March 2011), 419–420. Reprinted as Chapter 48 of *Selected Papers on Fun and Games* (see under Books).
- Q229.** The father of geekdom (an interview by Dave Wieczorek). *Think: The Magazine of Case Western Reserve University* (Fall/Winter 2010), 22–23.
- Q230.** Comment on problem 2680. *Journal of Recreational Mathematics* **35** (2006), 161.
- Q231.** (with nine other members of the Stanford T<sub>E</sub>X project) TUG 2010 panel discussion, moderated by David Walden. *TUGboat* **31** (2010), 125–137.
- Q232.** Interview with Donald E. Knuth (by Gianluca Pignalberi). *Free Software Magazine*, Issue 7 (August 2005), 13–15. Reprinted in *TUGboat* **26** (2005), 183–185. Italian translation in *ArsT<sub>E</sub>Xnica* **1** (2006), 5–7.
- Q233.** (by James Buchanan) Interview with Donald Knuth. *Linux User & Developer*, issue 77 (March 2008), 38–45.
- Q234.** (by Andrew Binstock) Interview with Donald Knuth for informIT (April 2008). [<http://www.informit.com/articles/article.aspx?p=1193856>]; Chinese translation by Zhao Jianping in *Programmer* (July 2008), 99–101 = [[http://blog.csdn.net/programmer\\_editor/archive/2008/07/10/2631316.aspx](http://blog.csdn.net/programmer_editor/archive/2008/07/10/2631316.aspx)]
- Q235.** (by Zhao Jianping, in Chinese) Eight questions answered by Donald Knuth. *Programmer* (November 2008), 108–110 = [[http://blog.csdn.net/programmer\\_editor/archive/2008/12/11/3501111.aspx](http://blog.csdn.net/programmer_editor/archive/2008/12/11/3501111.aspx)]
- Q236.** Problem 1868, dominoes in a frame. *Mathematics Magazine* **84** (2011), 150; solution in **85** (2012), 154–155.
- Q237.** Problem 2808, a pentomino tour. *Journal of Recreational Mathematics* **36** (2007), 166–167; solution in **37** (2008), 182–183.
- Q238.** (by Justin Richards) The *Art* of programming. *ITnow* (British Computer Society, July 2011), 18–19. Excerpts from a much longer interview at <http://www.bcs.org/content/conWebDoc/40462>.
- Q239.** Memories of Herb Wilf. *Notices of the American Mathematical Society* **62**, 4 (April 2015), 348–349.
- Q240.** Two thousand years of combinatorics. (Excerpted from Section 7.2.1.7 of *The Art of Computer Programming* by Robin Wilson.) Part I of *Combinatorics — Ancient & Modern*, edited by R. Wilson and John J. Watkins (Oxford University Press, 2013), 3–37.

- Q241.** Randomness in music. Excerpted from Chapter 22 of *Selected Papers on Fun and Games* (see under Books). In *The Best Writing on Mathematics 2013*, edited by Mircea Pitici (Princeton, New Jersey: Princeton University Press, 2013), 56–61.
- Q242.** *Conversations: The Essential Knuth*, an interview by Edgar G. Daylight, edited by Kurt De Grave (Heverlee, Belgium: Lonely Scholar, 2013), ii + 88 pp.
- Q243.** Problem 11685, another formula for the parity number (Thue–Morse). *American Mathematical Monthly* **120** (2013), 76; solution in **122** (2015), 81–82.
- Q244.** Solution to problems 2680, 2732, 2733, 2752, 2754. *Journal of Recreational Mathematics* **37** (2008), 78–84.
- Q245.** Problem 2853, pentasquare knight’s tour. *Journal of Recreational Mathematics* **37** (2008), 256; solution in *Topics in Recreational Mathematics 2/2015* (2015), 84–86.
- Q246.** The  $\text{\TeX}$  tuneup of 2014. *TUGboat* **35** (2014), 5–8.
- Q247.** Problem 11733, twisted fractal paths within the nonnegative integers. *American Mathematical Monthly* **120** (2013), 855; solution in **123** (2016), 98–100.
- Q248.** A footnote about ‘oh, oh, zero’. *TUGboat* **35** (2014), 232–234.
- Q249.** Problem 2860, Stanford steps. *Journal of Recreational Mathematics* **37** (2008), 352; solution in *Topics in Recreational Mathematics 3/2015* (2015), 97–98.
- Q250.** *Conversations: Algorithmic Barriers Falling:  $P=NP?$* , an interview by Edgar G. Daylight, edited by Kurt De Grave (Heverlee, Belgium: Lonely Scholar, 2014), iii + 116 pp.
- Q251.** Failure (brief interview by Christopher Ross). *WSJ. Magazine* (April 2015), 22. Reprinted in *On Point* (New York: Black Dog & Leventhal, 2018), 303.
- Q252.** Twenty questions for Donald Knuth, to celebrate the ePublication of *TAOCP*. *TUGboat* **35** (2014), 235–243.
- Q253.** Problem 11832, square of log of Catalan function. *American Mathematical Monthly* **122** (2015), 390; solution in **124** (2017), 660–661.
- Q254.** Dedication to Hermann Zapf, 1918–2015. *The Eutypion*, 34–35 (October 2015), 2–3; *TUGboat* **36** (2015), 92.
- Q255.** Problem 11901, mappings from saturating incrementation or decrementation. *American Mathematical Monthly* **123** (2016), 399; solution to appear.
- Q256.** Problem 1994, bounded gain in an unfair game. *Mathematics Magazine* **89** (2016), 148; in **90** (2017), 235–236.
- Q257.** Quickie problem 1061, strange polynomial connections. *Mathematics Magazine* **89** (2016), 224, 229–230.
- Q258.** Problem 11929, dissecting a  $3 \times 2n$  rectangle into equal-size pieces. *American Mathematical Monthly* **123** (2016), 831; solution to appear.
- Q259.** Problem 11959, an identity for the permanent. *American Mathematical Monthly* **124** (2017), 179; solution to appear.
- Q260.** Foreword to *New Insights From Old Programs* by Gauthier van den Hove (2017), to appear.
- Q261.** Foreword to *The MMIX Supplement* by Martin Ruckert (Upper Saddle River, N. J.: Addison–Wesley, 2015), iii–iv.
- Q262.** Computer Science as a major body of accumulated knowledge. (Transcript of impromptu remarks at the ACM 50-Year Turing Award celebration, 24 June 2017, translated into Japanese by Julien Kloetzer.) *IPSJ Magazine* **58** (Information Processing Society of Japan, 2017), 998–1004.
- Q263.** (with Alex Aiken, Edward Feigenbaum, Nils J. Nilsson, and Mehran Sahami) 50 years of innovation: Creating world-class computer science at Stanford. *Sandstone & Tile* **41,2** (Stanford, California: Stanford Historical Society (Spring/Summer 2017), 15–25.
- Q264.** Problem 11985, some log-concave sequences. *American Mathematical Monthly* **124** (2017), 563; solution to appear.

- Q265.** Problem 12005, tight  $m$ -by- $n$  pavings. *American Mathematical Monthly* **124** (2017), 755; solution to appear.
- Q266.** Native script in MathSciNet: Celebrating diversity (interview by Allyn Jackson). *Notices of the American Mathematical Society* **65**,1 (January 2018), 59–61.
- Q267.** “I’m a Lutheran” (interview by Megan Brandsrud). *Living Lutheran*, to appear.

## 5. Reports of Limited Circulation (\* means notes prepared by auditors of lectures)

- R1. Tic Tac Toe on the 650. Case Computing Center (Cleveland, Ohio, 1957), 8 pp.
- R2. Case Soap III. Case Computing Center, ser. IV, 1 (Cleveland, Ohio, February 1958), 28 pp.
- R3. Runcible I. Case Computing Center, ser. V, 1 (Cleveland, Ohio, March 1959), 67 pp.
- R4. (Editor) *Engineering and Science Review*. Case Institute of Technology, vol. 2, no. 1, 3, 4 (1959). Associate Editor, vol. 3 (1960). Article: “The revolutionary potrzebie” (November 1958), 18–20. Features: “Th<sub>5</sub>E<sub>4</sub> CH<sub>3</sub>EmIC<sub>2</sub>Al<sub>2</sub> Ca<sub>3</sub>P<sub>4</sub>Er” (March 1959), p. 32; “The plot thickens,” (November 1959), p. 45; “Math ace,” (May 1960), p. 24. Reprinted with additional comments as Chapters 3, 8, and 29 of *Selected Papers on Fun and Games* (see under Books).
- R5. (Editor) *Case Handbook*. Case Institute of Technology, 1959.
- R6. SuperSoap. Case Computing Center, ser. IV, 2 (Cleveland, Ohio, August 1959), 55 pp.
- R7. The internals of Algol 205. Burroughs Corporation, 1960. 30 pp.
- R8. BALGOL 220 (annotations on listing). Burroughs Corporation, 1960.
- R9. *m*th powers of algebraic roots. California Institute of Technology, Mathematics Department (Pasadena, California, April 1961). 7 pp.
- R10. Burroughs Algebraic Compiler for the 205. Burroughs Corporation publication no. 205-21003-D (Detroit, Michigan, October 1961), 30 pp.
- R11. FORTRAN II for the Univac Solid State computers. UNIVAC Division Sperry Rand (Bluebell, Pennsylvania, October 1962), 85 pp.
- R12. (with William C. Lynch) QADAAD (Quick And Dirty Assembler And Documentor), an assembly system for the Solid State II. Internal memorandum, August, 1962.
- R13. (with William C. Lynch) FORTRAN II Routine Block Chart (Annotated). UNIVAC Division Sperry Rand, publication no. UP-3843.1 (Bluebell, Pennsylvania, 1963), 50 pp.
- R14. A good scrambling function suitable for hardware. Burroughs Corporation Electrodata Division, Engineering Tech. Memo. No. 234 (Pasadena, California, October 1963), 22 pp.
- R15. Textbook of Combinatorial Mathematics (a partial translation of *Lehrbuch der Combinatorik*, by E. Netto). Library, California Institute of Technology (1963), approx. 150 pp.
- R16. Finite semifields and projective planes. Ph.D. thesis, California Institute of Technology (Pasadena, California, 1963), 70 pp.
- R17. Computer languages. California Institute of Technology, Seminar series on computer applications to biology (Pasadena, California, February 1963), 15 pp.; (December 1964), 12 pp.
- R18. Notes on Chebyshev approximation theory. California Institute of Technology, Mathematics Department (Pasadena, California, 1964). 7 pp.
- R19. Lectures in software design. Burroughs Corporation Electrodata Division (Pasadena, California, 1964), approx. 200 pp.
- R20. Notes on complex variable theory. California Institute of Technology, Mathematics Department (Pasadena, California, 1965), 36 pp.
- R21. The Thue-Siegel-Roth theorem. California Institute of Technology, Mathematics Department (Pasadena, California, 1966). 41 pp.
- R22. Exploration of the direct product (Kronecker product, tensor product) of matrices: Results of Math 5B class project. California Institute of Technology, Mathematics Department (Pasadena, California, March 1966), 10 pp.
- R23. Estimating the running time of BACKTRACK programs. IDA-CRD Working Paper No. 279 (Princeton, New Jersey, November 1969), 42 pp.
- R24. The Art of Computer Programming — errata et addenda. Stanford Computer Science Report 194 (Stanford, California, January 1971), 28 pp.



- R25.** (with R. L. Sites) MIX/360 User's Guide. Stanford Computer Science Report 197 (Stanford, California, March 1971), 11 pp.
- \*R26.** The analysis of algorithms. In *The Teaching of Programming at University Level*, B. Shaw, ed. (University of Newcastle-Upon-Tyne, 1971), 49–62.
- R27.** (with V. Chvátal and D. A. Klarner) Selected combinatorial research problems. Stanford Computer Science Report 292 (Stanford, California, June 1972), 29 pp.
- R28.** Matroid partitioning. Stanford Computer Science Report 342 (Stanford, California, 1973), 12 pp. Reprinted with an addendum as Chapter 17 of *Selected Papers on Design of Algorithms* (see under Books).
- \*R29.** Selected topics in Computer Science. Lecture Note Series, Matematisk institutt, Universitetet i Oslo (Oslo, Norway, 1973), Nr. 1 and Nr. 2. [Notes by Ole Amble, Ole-Johan Dahl, Erik Holbæk-Hanssen, Arne Jonassen, Torvald Kjeldaas, Stein Krogdahl, Åmund Lunde, Arne Maus, and Arne Wang. Part 1 contains: analysis of quicksort; dynamic storage allocation; flowcharts and Kirchhoff's first law; theory of matroids; complexity analysis of equivalence algorithms. Part 2 contains: strong components; hard problems; backtracking algorithms; pattern matching in strings; generation of combinatorial patterns.]
- R30.** A review of *Structured Programming*. Stanford Computer Science Report 371 (Stanford, California, June 1973).
- \*R31.** “Stable marriage” — problemet og sammenhengen med hashing og “coupon collecting”. (Norwegian) University of Bergen (Bergen, Norway, June 1973), 20 pp.
- R32.** Sorting and Searching — errata and addenda. Stanford Computer Science Report 392 (Stanford, California, October 1973), 35 pp.
- R33.** The State of *The Art of Computer Programming*. Stanford Computer Science Report 551 (Stanford, California, June 1976), 57 pp.
- \*R34.** (with Michael J. Clancy) A programming and problem-solving seminar. Stanford Computer Science Report 606 (Stanford, California, April 1977), 99 pp.
- R35.** Tau Epsilon Chi, a system for technical text. Stanford Computer Science Report 675 (Stanford, California, September 1978), 198 pp. Reprinted with corrections as part 2 of *T<sub>E</sub>X and METAFont* (see under Books).
- \*R36.** (with Chris van Wyk) A programming and problem-solving seminar. Stanford Computer Science Report 707 (Stanford, California, January 1979), 83 pp.
- R37.** The errata of computer programming. Stanford Computer Science Report 712 (Stanford, California, January 1979), 57 pp. Reprinted in *Dr. Dobb's Journal of Computer Calisthenics & Orthodontia* 5,6 (June 1980), 27–39.
- R38.** METAFont, a system for alphabet design. Stanford Computer Science Report 762 (Stanford, California, September 1979), 105 pp. Reprinted with corrections as part 3 of *T<sub>E</sub>X and METAFont* (see under Books).
- R39.** The Computer Modern family of typefaces. Stanford Computer Science Report 780 (Stanford, California, January 1980), 406 pp.
- \*R40.** (with Allan A. Miller) A programming and problem-solving seminar. Stanford Computer Science Report 863 (Stanford, California, June 1981), 81 pp.
- R41.** The last whole errata catalog. Stanford Computer Science Report 868 (Stanford, California, July 1981), 41 pp.
- R42.** The WEB system of structured documentation. Stanford Computer Science Report 980 (Stanford, California, September 1983), 206 pp. Most of this report has been reprinted in *Weaving a Program: Literate Programming in WEB* by Wayne Sewell (New York: Van Nostrand Reinhold, 1989), 271–434.
- R43.** (with David R. Fuchs) T<sub>E</sub>Xware. Stanford Computer Science Report 1097 (Stanford, California, April 1986), 10 + 30 + 53 + 53 pp.
- R44.** A torture test for T<sub>E</sub>X. Stanford Computer Science Report 1027 (Stanford, California, November 1984), 142 pp.

- \***R45.** (with Joseph S. Weening) A programming and problem-solving seminar. Stanford Computer Science Report 989 (Stanford, California, December 1983), ii+91 pp.
- \***R46.** (with John D. Hobby) A programming and problem-solving seminar. Stanford Computer Science Report 990 (Stanford, California, December 1983), 61 pp.
- \***R47.** (with Ramsey W. Haddad) A programming and problem-solving seminar. Stanford Computer Science Report 1055 (Stanford, California, June 1985), 103 pp.
- R48.** A torture test for METAFONT. Stanford Computer Science Report 1095 (Stanford, California, January 1986), 78 pp.
- \***R49.** (with Tomas G. Rokicki) A programming and problem-solving seminar. Stanford Computer Science Report 1154 (Stanford, California, April 1987), 89 pp.
- \***R50.** (with Tracy Larrabee and Paul M. Roberts) Mathematical writing. Stanford Computer Science Report 1193 (Stanford, California, January 1988), 117 pp. Reprinted with corrections by the Mathematical Association of America (see under Books).
- R51.** 3 : 16, an approach to Bible study. In *A Sixth Conference on Mathematics from a Christian Perspective*, edited by Robert L. Brabenec (proceedings of a conference at Calvin College, May 1987, sponsored by the Association of Christians in the Mathematical Sciences), 3–25.
- R52.** (with Tomas G. Rokicki and Arthur L. Samuel) METAFONTware. Stanford Computer Science Report 1255 (Stanford, California, April 1989), 30 + 42 + 87 + 48 pp. Reprinted in *TEXniques* **13** (1990).
- R53.** (with Silvio Levy) The CWEB system of structured documentation. Stanford Computer Science Report 1336 (Stanford, California, October 1990), 200 pp. Also issued as University of Minnesota Supercomputer Institute Research Report UMSI 91/56 (Minneapolis, Minnesota, February 1991).
- \***R54.** (interview translated into French by Philippe Gabrini) La foi d’un scientifique. *La Vie Chrétienne*, Journal de l’Église Presbytérienne au Canada (October–November 1991), 11–12.
- \***R55.** (with Kenneth A. Ross) A programming and problem-solving seminar. Stanford Computer Science Report 1269 (Stanford, California, July 1989), 87 pp.
- R56.** Stable husbands (extended abstract). In *25th International Seminar on the Teaching of Computing Science at University Level*, B. Randell, ed. (University of Newcastle-Upon-Tyne, 1992), III.1–III.7.
- R57.** The Stanford GraphBase (extended abstract). In *25th International Seminar on the Teaching of Computing Science at University Level*, B. Randell, ed. (University of Newcastle-Upon-Tyne, 1992), III.8–III.14.
- R58.** (interview by Dan Doernberg) Donald E. Knuth: Programming for a human being instead of a computer. *New Book Bulletin*, Computer Literacy Bookshops (Spring 1994), 4–5; (Summer 1994), 4–5. [<http://www.clbooks.com/nbb/knuth.html>] Czech translation by Jiří Zlatuška, *ÚVT MU Zprovodaj* **6**, 1 (1995), 1–4; **6**, 2 (1995), 15–20.
- R59.** Digital typography. *Kyoto Prizes 1996* (Kyoto: Inamori Foundation, 1997), 82–109. Reprinted as Chapter 1 of *Digital Typography* (see under Books). Russian translation in *Komp’ûternaiâ Tipografiâ*, 19–35 (see under Books).
- R60.** (conducted by Philip L. Frana) An oral history interview with Donald E. Knuth. OH 332 (Minneapolis: Charles Babbage Institute, 8 November 2001), 27pp. [<http://hdl.handle.net/11299/107413>]
- R61.** (by Wolfgang Stieler, in German) Freude, die ein Maler empfindet. *Technology Review*, German edition (25 November 2005). Reprinted in *Die TEXnische Komödie* **18**, 1 (2006), 6–10.
- R62.** (conducted by Edward A. Feigenbaum) An oral history interview with Donald E. Knuth. Computer History Museum catalog number 102658053 (Mountain View, California: Computer History Museum, 14 and 21 March 2007), 73pp. [[www.computerhistory.org/collections/catalog/102658053](http://www.computerhistory.org/collections/catalog/102658053)]
- R63.** (conducted by Susan W. Schofield) An oral history interview with Donald E. Knuth. (Stanford, California: Stanford Historical Society, 8 and 11 May 2018), to appear.