

References

Principles of Complex Systems

Course CSYS/MATH 300, Fall, 2009

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Outline

References

References

References

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References I



M. Abramowitz and I. A. Stegun, editors.
Handbook of Mathematical Functions.
Dover Publications, New York, 1974.



L. Adamic, R. Lukose, A. Puniyani, and B. Huberman.
Search in power-law networks.
Phys. Rev. E, 64:046135, 2001. [pdf](#) (田)



M. Adler.
Stardom and talent.
American Economic Review, pages 208–212, 1985. [pdf](#) (田)



R. Albert, H. Jeong, and A.-L. Barabási.
Error and attack tolerance of complex networks.
Nature, 406:378–382, July 2000. [pdf](#) (田)



P. W. Anderson.
More is different.
Science, 177(4047):393–396, August 1972. [pdf](#) (田)



R. Axtell.
Zipf distribution of U.S. firm sizes.
Science, 293(5536):1818–1820, 2001. [pdf](#) (田)



R. Badii and A. Politi.
Complexity: Hierarchical structures and scaling in physics.
Cambridge University Press, Cambridge, UK, 1997.



P. Bak.
How Nature Works: the Science of Self-Organized Criticality.
Springer-Verlag, New York, 1996.

References II



P. Bak, C. Tang, and K. Wiesenfeld.

Self-organized criticality - an explanation of $1/f$ noise.

Phys. Rev. Lett., 59(4):381–384, 1987.



P. Ball.

Critical Mass: How One Thing Leads to Another.

Farra, Straus, and Giroux, New York, 2004.



J. R. Banavar, A. Maritan, and A. Rinaldo.

Size and form in efficient transportation networks.

Nature, 399:130–132, 1999. [pdf](#) (田)



Y. Bar-Yam.

Dynamics of Complex Systems™.

Westview Press, Boulder, CO, 2003.



A.-L. Barabási and R. Albert.

Emergence of scaling in random networks.

Science, 286:509–511, 1999. [pdf](#) (田)



E. D. Beinhocker.

The Origin of Wealth.

Harvard Business School Press, Cambridge, MA, 2006.



A. Bejan.

Shape and Structure, from Engineering to Nature.

Cambridge Univ. Press, Cambridge, UK, 2000.



P. Bennett and P. Harvey.

Active and resting metabolism in birds—allometry, phylogeny and ecology.

J. Zool., 213:327–363, 1987.

References III



B. J. L. Berry.

Déjà vu, Mr. Krugman.

Urban Geography, 20:1–2, 1999. [pdf](#) (田)



L. M. A. Bettencourt, J. Lobo, D. Helbing, Kühnhert, and G. B. West.

Growth, innovation, scaling, and the pace of life in cities.

Proc. Natl. Acad. Sci., 104(17):7301–7306, 2007. [pdf](#) (田)



S. Bikhchandani, D. Hirshleifer, and I. Welch.

A theory of fads, fashion, custom, and cultural change as informational cascades.

J. Polit. Econ., 100:992–1026, 1992.



S. Bikhchandani, D. Hirshleifer, and I. Welch.

Learning from the behavior of others: Conformity, fads, and informational cascades.

J. Econ. Perspect., 12(3):151–170, 1998. [pdf](#) (田)



P. M. Blau and J. E. Schwartz.

Crosscutting Social Circles.

Academic Press, Orlando, FL, 1984.



K. L. Blaxter, editor.

Energy Metabolism; Proceedings of the 3rd symposium held at Troon, Scotland, May 1964.

Academic Press, New York, 1965.



J. J. Blum.

On the geometry of four-dimensions and the relationship between metabolism and body mass.

J. Theor. Biol., 64:599–601, 1977.



N. Boccaro.

Modeling Complex Systems.

Springer-Verlag, New York, 2004.

References IV

-  J. Bollen, H. Van de Sompel, A. Hagberg, L. Bettencourt, R. Chute, M. A. Rodriguez, and B. Lyudmila.
Clickstream data yields high-resolution maps of science.
PLoS ONE, 4:e4803, 2009. [pdf](#) (田)
-  S. Bornholdt and H. G. Schuster, editors.
Handbook of Graphs and Networks.
Wiley-VCH, Berlin, 2003.
-  R. L. Breiger.
The duality of persons and groups.
Social Forces, 53(2):181–190, 1974. [pdf](#) (田)
-  D. Brockmann, L. Hufnagel, and T. Geisel.
The scaling laws of human travel.
Nature, pages 462–465, 2006. [pdf](#) (田)
-  S. Brody.
Bioenergetics and Growth.
Reinhold, New York, 1945.
reprint, .
-  J. Carlson and J. Doyle.
Highly optimized tolerance: A mechanism for power laws in design systems.
Phys. Rev. Lett., 60(2):1412–1427, 1999. [pdf](#) (田)
-  J. Carlson and J. Doyle.
Highly optimized tolerance: Robustness and design in complex systems.
Phys. Rev. Lett., 84(11):2529–2532, 2000. [pdf](#) (田)

References V



E. Castronova.

Synthetic Worlds: The Business and Culture of Online Games.
University of Chicago Press, Chicago, IL, 2005.



I. D. Chase, C. Tovey, D. Spangler-Martin, and M. Manfredonia.

Individual differences versus social dynamics in the formation of animal dominance hierarchies.
Proc. Natl. Acad. Sci., 99(8):5744–5749, 2002. [pdf](#) (田)



N. A. Christakis and J. H. Fowler.

The spread of obesity in a large social network over 32 years.
New England Journal of Medicine, 357:370–379, 2007. [pdf](#) (田)



N. A. Christakis and J. H. Fowler.

The collective dynamics of smoking in a large social network.
New England Journal of Medicine, 358:2249–2258, 2008. [pdf](#) (田)



R. B. Cialdini.

Influence: Science and Practice.
Allyn and Bacon, Boston, MA, 4th edition, 2000.



A. Clauset, C. Moore, and M. E. J. Newman.

Structural inference of hierarchies in networks, 2006. [pdf](#) (田)



A. Clauset, C. Moore, and M. E. J. Newman.

Hierarchical structure and the prediction of missing links in networks.
Nature, 453:98–101, 2008. [pdf](#) (田)



A. Clauset, M. Young, and K. S. Gleditsch.

On the Frequency of Severe Terrorist Events.
Journal of Conflict Resolution, 51(1):58–87, 2007. [pdf](#) (田)

References VI

References



J. S. Coleman.
Foundations of Social Theory.
Belknap Press, Cambridge, MA, 1994.



M. H. DeGroot.
Probability and Statistics.
Addison-Wesley, Reading, Massachusetts, 1975.



P. S. Dodds and D. H. Rothman.
Unified view of scaling laws for river networks.
Physical Review E, 59(5):4865–4877, 1999. [pdf](#) (田)



P. S. Dodds and D. H. Rothman.
Scaling, universality, and geomorphology.
Annu. Rev. Earth Planet. Sci., 28:571–610, 2000. [pdf](#) (田)



P. S. Dodds, D. H. Rothman, and J. S. Weitz.
Re-examination of the “3/4-law” of metabolism.
Journal of Theoretical Biology, 209(1):9–27, March 2001.
. [pdf](#) (田)



P. S. Dodds and D. J. Watts.
Universal behavior in a generalized model of contagion.
Phys. Rev. Lett., 92:218701, 2004. [pdf](#) (田)



P. S. Dodds and D. J. Watts.
A generalized model of social and biological contagion.
J. Theor. Biol., 232:587–604, 2005. [pdf](#) (田)

References VII



S. N. Dorogovtsev and J. F. F. Mendes.
Evolution of Networks.
Oxford University Press, Oxford, UK, 2003.



S. Douady and Y. Couder.
Phyllotaxis as a dynamical self organizing process Part I: The spiral modes resulting from time-periodic iterations.
J. Theor. Biol., 178:255–274, 1996. [pdf](#) (田)



S. Douady and Y. Couder.
Phyllotaxis as a dynamical self organizing process Part II: The spontaneous formation of a periodicity and the coexistence of spiral and whorled patterns.
J. Theor. Biol., 178:275–294, 1996. [pdf](#) (田)



S. Douady and Y. Couder.
Phyllotaxis as a dynamical self organizing process Part III: The simulation of the transient regimes of ontogeny.
J. Theor. Biol., 178:295–312, 1996. [pdf](#) (田)



R. M. D'Souza, C. Borgs, J. T. Chayes, N. Berger, and R. D. Kleinberg.
Emergence of tempered preferential attachment from optimization.
Proc. Natl. Acad. Sci., 104:6112–6117, 2007. [pdf](#) (田)



W. Feller.
An Introduction to Probability Theory and Its Applications, volume I.
John Wiley & Sons, New York, third edition, 1968.



R. Ferrer i Cancho and R. Solé.
The small world of human language.
Proc. R. Soc. Lond. B, 26:2261–2265, 2001. [pdf](#) (田)

References VIII



R. Ferrer i Cancho and R. V. Solé.
Zipf's law and random texts.
Advances in Complex Systems, 5(1):1–6, 2002.



R. Foote.
Mathematics and complex systems.
Science, 318:410–412, 2007. [pdf](#) (田)



M. T. Gastner and M. E. J. Newman.
Shape and efficiency in spatial distribution networks.
J. Stat. Mech.: Theor. & Exp., 1:01015–, 2006. [pdf](#) (田)



R. Gibrat.
Les inégalités économiques.
Librairie du Recueil Sirey, Paris, France, 1931.



M. Gladwell.
The Tipping Point.
Little, Brown and Company, New York, 2000.



K.-I. Goh, G. Salvi, B. Kahng, and D. Kim.
Skeleton and fractal scaling in complex networks.
Phys. Rev. Lett., 96:Article # 018701, 2006. [pdf](#) (田)



M. C. González, C. A. Hidalgo, and A.-L. Barabási.
Understanding individual human mobility patterns.
Nature, 453:779–782, 2008. [pdf](#) (田)



I. Gradshteyn and I. Ryzhik.
Table of Integrals, Series, and Products.
Academic Press, San Diego, fifth edition, 1994.

References IX



M. Granovetter.

Threshold models of collective behavior.

Am. J. Sociol., 83(6):1420–1443, 1978. [pdf](#) (田)



M. Granovetter and R. Soong.

Threshold models of diversity: Chinese restaurants, residential segregation, and the spiral of silence.

Sociological Methodology, 18:69–104, 1988. [pdf](#) (田)



M. S. Granovetter and R. Soong.

Threshold models of interpersonal effects in consumer demand.

Journal of Economic Behavior & Organization, 7:83–99, 1986.

Formulates threshold as function of price, and introduces exogenous supply curve. [pdf](#) (田)



J. T. Hack.

Studies of longitudinal stream profiles in Virginia and Maryland.

United States Geological Survey Professional Paper, 294-B:45–97, 1957.



A. Halevy, P. Norvig, and F. Pereira.

The unreasonable effectiveness of data.

IEEE Intelligent Systems, 24:8–12, 2009. [pdf](#) (田)



A. Hemmingsen.

The relation of standard (basal) energy metabolism to total fresh weight of living organisms.

Rep. Steno Mem. Hosp., 4:1–58, 1950.



A. Hemmingsen.

Energy metabolism as related to body size and respiratory surfaces, and its evolution.

Rep. Steno Mem. Hosp., 9:1–110, 1960.

References X

-  [A. A. Heusner.](#)
Size and power in mammals.
Journal of Experimental Biology, 160:25–54, 1991.
-  [C. A. Hidalgo, B. Klinger, A.-L. Barabási, and R. Hausman.](#)
The product space conditions the development of nations.
Science, 317:482–487, 2007. [pdf](#) (田)
-  [R. A. Hill, R. A. Bentley, and R. I. M. Dunbar.](#)
Network scaling reveals consistent fractal pattern in hierarchical mammalian societies.
Biology Letters, 2008. [pdf](#) (田)
-  [T. P. Hill.](#)
The first-digit phenomenon.
American Scientist, 86:358–, 1998.
-  [E. Hoffer.](#)
The True Believer: On The Nature Of Mass Movements.
Harper and Row, New York, 1951.
-  [E. Hoffer.](#)
The Passionate State of Mind: And Other Aphorisms.
Buccaneer Books, 1954.
-  [B. A. Huberman and L. A. Adamic.](#)
Evolutionary dynamics of the World Wide Web.
Technical report, Xerox Palo Alto Research Center, 1999.
-  [B. A. Huberman and L. A. Adamic.](#)
The nature of markets in the World Wide Web.
Quarterly Journal of Economic Commerce, 1:5–12, 2000.

References XI

-  [H. J. Jensen.](#)
Self-Organized Criticality: Emergent Complex Behavior in Physical and Biological Systems.
Cambridge Lecture Notes in Physics. Cambridge University Press, Cambridge, UK, 1998.
-  [N. F. Johnson, M. Spagat, J. A. Restrepo, O. Becerra, J. C. Bohorquez, N. Suarez, E. M. Restrepo, and R. Zarama.](#)
Universal patterns underlying ongoing wars and terrorism, 2006. [pdf](#) (田)
-  [E. Katz and P. F. Lazarsfeld.](#)
Personal Influence.
The Free Press, New York, 1955.
-  [S. Kauffman.](#)
The Origins of Order.
Oxford, 1993.
-  [M. Kearns, S. Suri, and N. Montfort.](#)
An experimental study of the coloring problem on human subject networks.
Science, 313:824–827, 2006. [pdf](#) (田)
-  [M. Kleiber.](#)
Body size and metabolism.
Hilgardia, 6:315–353, 1932.
-  [J. Kleinberg.](#)
Navigation in a small world.
Nature, 406:845, 2000. [pdf](#) (田)
-  [J. M. Kleinberg.](#)
Authoritative sources in a hyperlinked environment.
Proc. 9th ACM-SIAM Symposium on Discrete Algorithms, 1998. [pdf](#) (田)

References XII

-  G. Kossinets.
Effects of missing data in social networks.
Social Networks, 28:247–268, 2006.
-  G. Kossinets and D. J. Watts.
Empirical analysis of evolving social networks.
Science, 311:88–90, 2006. [pdf](#) (田)
-  M. Kretzschmar and M. Morris.
Measures of concurrency in networks and the spread of infectious disease.
Math. Biosci., 133:165–95, 1996. [pdf](#) (田)
-  P. Krugman.
The self-organizing economy.
Blackwell Publishers, Cambridge, Massachusetts, 1995.
-  T. Kuran.
Now out of never: The element of surprise in the east european revolution of 1989.
World Politics, 44:7–48, 1991. [pdf](#) (田)
-  T. Kuran.
Private Truths, Public Lies: The Social Consequences of Preference Falsification.
Harvard University Press, Cambridge, MA, Reprint edition, 1997.
-  P. Laureti, L. Moret, and Y.-C. Zhang.
Aggregating partial, local evaluations to achieve global ranking.
Physica A, 345(3–4):705–712, January 2004. [pdf](#) (田)
-  L. B. Leopold.
A View of the River.
Harvard University Press, Cambridge, MA, 1994.

References XIII



E. Lieberman, J.-B. Michel, J. Jackson, T. Tang, and M. A. Nowak.
Quantifying the evolutionary dynamics of language.
Nature, 449:713–716, 2007. [pdf](#) (田)



A. J. Lotka.
The frequency distribution of scientific productivity.
Journal of the Washington Academy of Science, 16:317–323, 1926.



O. Malcai, O. Biham, and S. Solomon.
Power-law distributions and lévy-stable intermittent fluctuations in stochastic systems of many autocatalytic elements.
Phys. Rev. E, 60(2):1299–1303, Aug 1999. [pdf](#) (田)



B. B. Mandelbrot.
An informational theory of the statistical structure of languages.
In W. Jackson, editor, *Communication Theory*, pages 486–502. Butterworth, Woburn, MA, 1953.



T. McMahon.
Size and shape in biology.
Science, 179:1201–1204, 1973. [pdf](#) (田)



T. A. McMahon and J. T. Bonner.
On Size and Life.
Scientific American Library, New York, 1983.



G. A. Miller.
Some effects of intermittent silence.
American Journal of Psychology, 70:311–314, 1957. [pdf](#) (田)

References XIV



J. H. Miller and S. E. Page.

Complex Adaptive Systems: An introduction to computational models of social life.
Princeton University Press, Princeton, NJ, 2007.



R. Milo, N. Kashtan, S. Itzkovitz, M. E. J. Newman, and U. Alon.

On the uniform generation of random graphs with prescribed degree sequences, 2003. [pdf](#) (田)



M. Mitzenmacher.

A brief history of generative models for power law and lognormal distributions.
Internet Mathematics, 1:226–251, 2003. [pdf](#) (田)



D. R. Montgomery and W. E. Dietrich.

Channel initiation and the problem of landscape scale.
Science, 255:826–30, 1992. [pdf](#) (田)



E. W. Montroll and M. W. Shlesinger.

On $1/f$ noise and other distributions with long tails.
Proc. Natl. Acad. Sci., 79:3380–3383, 1982.



E. W. Montroll and M. W. Shlesinger.

Maximum entropy formalism, fractals, scaling phenomena, and $1/f$ noise: a tale of tails.
J. Stat. Phys., 32:209–230, 1983.



J. D. Murray.

Mathematical Biology.
Springer, New York, Third edition, 2002.



S. Newcomb.

Note on the frequency of use of the different digits in natural numbers.
American Journal of Mathematics, 4:39–40, 1881. [pdf](#) (田)

References XV



M. Newman.

Assortative mixing in networks.

Phys. Rev. Lett., 89:208701, 2002. [pdf](#) (田)



M. E. J. Newman.

The structure and function of complex networks.

SIAM Review, 45(2):167–256, 2003. [pdf](#) (田)



M. E. J. Newman, M. Girvan, and J. D. Farmer.

Optimal design, robustness, and risk aversion.

Phys. Rev. Lett., 89:028301, 2002.



M. A. Nowak.

Five rules for the evolution of cooperation.

Science, 314:1560–1563, 2006. [pdf](#) (田)



W. H. Press, S. A. Teukolsky, W. T. Vetterling, and B. P. Flannery.

Numerical Recipes in C.

Cambridge University Press, second edition, 1992.



D. J. d. S. Price.

Networks of scientific papers.

Science, 149:510–515, 1965. [pdf](#) (田)



D. J. d. S. Price.

A general theory of bibliometric and other cumulative advantage processes.

J. Amer. Soc. Inform. Sci., 27:292–306, 1976.



F. Radicchi, J. J. Ramasco, A. Barrat, and S. Fortunato.

Complex networks renormalization: Flows and fixed points.

Phys. Rev. Lett., 101:Article # 148701, 2008. [pdf](#) (田)

References XVI



P. J. Rentfrow, S. D. Gosling, and J. Potter.

A theory of the emergence, persistence, and expression of geographic variation in psychological characteristics.

Perspectives on Psychological Science, 3:339–369, 2008. [pdf](#) (田)



C. J. Rhodes and R. M. Anderson.

Power laws governing epidemics in isolated populations.

Nature, 381:600–602, 1996. [pdf](#) (田)



L. F. Richardson.

Variation of the frequency of fatal quarrels with magnitude.

J. Amer. Stat. Assoc., 43:523–546, 1949. [pdf](#) (田)



I. Rodríguez-Iturbe and A. Rinaldo.

Fractal River Basins: Chance and Self-Organization.

Cambridge University Press, Cambridge, UK, 1997.



S. Rosen.

The economics of superstars.

Am. Econ. Rev., 71:845–858, 1981. [pdf](#) (田)



M. Rubner.

Ueber den einfluss der körpergrösse auf stoffund kraftwechsel.

Z. Biol., 19:535–562, 1883.



M. J. Salganik, P. S. Dodds, and D. J. Watts.

An experimental study of inequality and unpredictability in an artificial cultural market.

Science, 311:854–856, 2006. [pdf](#) (田)

References XVII



Sarrus and Rameaux.

Rapport sur une mémoire adressé à l'Académie de Médecine.
Bull. Acad. R. Méd. (Paris), 3:1094–1100, 1838–39.



M. Scheffer, J. Bascompte, W. A. Brock, V. Brovkin, S. R. Carpenter, V. Dakos, H. Held, E. H. van Nes, M. Rietkerk, and G. Sugihara.
Early-warning signals for critical transition.
Nature, 461:53–59, 2009. [pdf](#) (田)



A. E. Scheidegger.

The algebra of stream-order numbers.
United States Geological Survey Professional Paper, 525-B:B187–B189, 1967.



T. Schelling.

Dynamic models of segregation.
J. Math. Sociol., 1:143–186, 1971.



T. C. Schelling.

Hockey helmets, concealed weapons, and daylight saving: A study of binary choices with externalities.
J. Conflict Resolut., 17:381–428, 1973. [pdf](#) (田)



T. C. Schelling.

Micromotives and Macrobehavior.
Norton, New York, 1978.



S. S. Shen-Orr, R. Milo, S. Mangan, and U. Alon.

Network motifs in the transcriptional regulation network of *Escherichia coli*.
Nature Genetics, pages 64–68, 2002. [pdf](#) (田)

References XVIII



G. Simmel.

The number of members as determining the sociological form of the group. I.
American Journal of Sociology, 8:1–46, 1902.



H. A. Simon.

On a class of skew distribution functions.
Biometrika, 42:425–440, 1955. [pdf](#) (田)



C. Song, S. Havlin, and H. A. Makse.

Self-similarity of complex networks.
Nature, 433:392–395, 2005. [pdf](#) (田)



C. Song, S. Havlin, and H. A. Makse.

Origins of fractality in the growth of complex networks.
Nature Physics, 2:275–281, 2006. [pdf](#) (田)



D. Sornette.

Critical Phenomena in Natural Sciences.
Springer-Verlag, Berlin, 2nd edition, 2003.



W. R. Stahl.

Scaling of respiratory variables in mammals.
Journal of Applied Physiology, 22:453–460, 1967.



D. Stauffer and A. Aharony.

Introduction to Percolation Theory.
Taylor & Francis, Washington, D.C., Second edition, 1992.



S. H. Strogatz.

Romanesque networks.
Nature, 433:365–366, 2005. [pdf](#) (田)

References XIX



C. R. Sunstein.

Infotopia: How many minds produce knowledge.
Oxford University Press, New York, 2006.



N. N. Taleb.

The Black Swan.
Random House, New York, 2007.



E. Tokunaga.

The composition of drainage network in Toyohira River Basin and the valuation of Horton's first law.
Geophysical Bulletin of Hokkaido University, 15:1–19, 1966.



P. Turchin.

Historical Dynamics: Why States Rise and Fall.
Princeton University Press, Princeton, NJ, 2003.



D. L. Turcotte, J. D. Pelletier, and W. I. Newman.

Networks with side branching in biology.
Journal of Theoretical Biology, 193:577–592, 1998.



P. B. Umbanhowar, F. Melo, and H. L. Swinney.

Localized excitations in a vertically vibrated granular layer.
Nature, 382:793–6, 29 August 1996. [pdf](#) (田)



F. Vega-Redondo.

Complex Social Networks.
Cambridge University Press, 2007.



S. Wasserman and K. Faust.

Social Network Analysis: Methods and Applications.
Cambridge University Press, Cambridge, UK, 1994.

References XX



D. J. Watts.

A simple model of global cascades on random networks.
Proc. Natl. Acad. Sci., 99(9):5766–5771, 2002. [pdf](#) (田)



D. J. Watts.

Six Degrees.
Norton, New York, 2003.



D. J. Watts, P. S. Dodds, and M. E. J. Newman.

Identity and search in social networks.
Science, 296:1302–1305, 2002. [pdf](#) (田)



D. J. Watts and S. J. Strogatz.

Collective dynamics of ‘small-world’ networks.
Nature, 393:440–442, 1998. [pdf](#) (田)



G. B. West, J. H. Brown, and B. J. Enquist.

A general model for the origin of allometric scaling laws in biology.
Science, 276:122–126, 1997. [pdf](#) (田)



U. Wilensky.

Netlogo segregation model.

<http://ccl.northwestern.edu/netlogo/models/Segregation>. Center for Connected Learning and Computer-Based Modeling, Northwestern University, Evanston, IL., 1998.



D. Wilkinson.

Deadly Quarrels: Lewis F. Richardson and the Statistical Study of War.
University of California Press, London, UK, 1980.



G. U. Yule.

A mathematical theory of evolution, based on the conclusions of Dr J. C. Willis, F.R.S.
Phil. Trans. B, 213:21–, 1924.



K. Zhang and T. J. Sejnowski.

A universal scaling law between gray matter and white matter of cerebral cortex.
Proceedings of the National Academy of Sciences, 97:5621–5626, May 2000. [pdf](#) (田)



G. K. Zipf.

Human Behaviour and the Principle of Least-Effort.
Addison-Wesley, Cambridge, MA, 1949.