

PUBLICATIONS OF ZDENĚK P. BAŽANT

March 14, 2000

1 Books

1.1 Textbooks and Monographs

B1. Bažant, Z.P. (1966). *Creep of Concrete in Structural Analysis* (in Czech). State Publishers of Technical Literature (SNTL), Prague (monograph, 186 pp.).

B2. Bažant, Z.P., and Cedolin, L. (1991). *Stability of Structures: Elastic, Inelastic, Fracture and Damage Theories*, Oxford University Press, New York (textbook and reference volume, 984 + xxiv pp.).

B3. Bažant, Z.P., and Kaplan, M.F. (1996). *Concrete at High Temperatures: Material Properties and Mathematical Models*, Longman (Addison-Wesley), London (monograph and reference volume, 412 + xii pp.).

B4. Bažant, Z.P., and Planas, J. (1998). *Fracture and Size Effect in Concrete and Other Quasibrittle Materials*. CRC Press, Boca Raton and London (textbook and reference volume, 616 + xxii pp.).

B5. Bažant, Z.P. (2000). *Scaling of Structural Strength* (monograph). Hermes Scientific Publications—
in press.

1.2 Published Lecture Notes

L1. Bažant, Z.P. (1979). *Advanced Topics in Inelasticity and Failure of Concrete* (text of intensive course given at Swedish Cem. & Concr. Res. Inst., Royal Inst. of Techn.), publ. by Gotab, Stockholm (370 pp.); republished with updates by *Ecole des Ponts et Chaussée*, Paris (1980).

L2. Bažant, Z.P., Schnobrich, W.C., and Scordelis, A.C. (1978). *Analysis of Reinforced Concrete Structures by Finite Element Method* (intensive course text), Politecnico di Milano (334 pp.); republished with updates by Technische Hochschule Wien (1981).

1.3 Books Edited, with Chapters Contributed

E1. Bažant, Z.P., and Wittmann, F.H. Eds. (1982). *Creep and Shrinkage in Concrete Structures*, J. Wiley, London (363 pp.).

E2. Bažant, Z.P., Editor (1983). *Mechanics of Geomaterials: Rocks, Concretes, Soils*, Preprints of IUTAM Prager Symposium, Northwestern University, Evanston, IL (664 pp.).

E3. Bažant, Z.P., Editor (1985). *Mechanics of Geomaterials: Rocks, Concretes, Soils*, J. Wiley & Sons, Chich-

ester, New York (610 pp.) (Proc., IUTAM Symposium held at Northwestern University, Sept, 1983).

E4. Bažant, Z.P., Editor (1986). *Creep and Shrinkage of Concrete: Mathematical Modeling*, Preprints of Fourth RILEM International Symposium, Northwestern University (990 pp.).

E5. Bažant, Z.P., Editor (1988). *Mathematical Modeling of Creep and Shrinkage of Concrete*, John Wiley & Sons, Chichester and New York.

E6. Mazars, J., and Bažant, Z.P., Editors (1989). *Damage, Localization and Size Effect* (Proc. of France-U.S. Workshop, held at E.N.S. in Cachan, France), Elsevier, London (also Preprints, 1988).

E7. Li, V.C., and Bažant, Z.P., Editors (1989). *Fracture Mechanics: Applications to Concrete*, Special Publ. SP-118, Am. Concrete Inst., Detroit.

E8. Bažant, Z.P., Editor (1991). *Current Trends in Concrete Fracture Research* (reprinted from Special Issue of Intern. J. of Fracture 51, 1991, No.1-2), Kluwer Academic Publishers, Dordrecht—Boston (202 pp.).

E9. Bažant, Z.P., Editor (1992). *Fracture Mechanics of Concrete Structures*, Proc. of the First Intern. Conf. (FraMCoS-1), held in Breckenridge, Colorado, June 1–5, Elsevier, London (1040 pp.).

E10. Gerstle, W., and Bažant, Z.P., Editors (1992). *Concrete Design Based on Fracture Mechanics*, Special Publ. SP-134, Am. Concrete Inst., Detroit.

E11. Dempsey, J.P., Bažant, Z.P., Rajapakse, Y.D.S., Sunder, S. Shyam, Editors (1993). “Ice Mechanics 1993” (Proc. of a Symposium as part of ASCE–ASME–SES Joint Mechanics Meeting held in Charlottesville, VA.), AMD Vol. 163, Am. Soc. of Mech. Engrgs., New York, 1993.

E12. Bažant, Z.P., and Carol, I., Editors (1993). *Creep and Shrinkage of Concrete* (Proc., ConCreep-5—5th Intern. RILEM Symposium held in Barcelona, Sept. 9–6), E & FN Spon (Chapman & Hall), London, U.K. (936 + xx pages).

E13. Mihashi, H., Okamura, H., and Bažant, Z.P., Editors (1994). *Size effect in concrete structures* (Proc., Japan Concrete Institute Intern. Workshop held in Sendai, Japan, Oct.31–Nov.2, 1993). E & FN Spon, London-New York (556 + xiv pages).

E14. Bažant, Z.P., Bittnar, Z., Jirásek, M., and Mazars, J., Editors (1994). *Fracture and Damage in Quasibrittle Structures: Experiment, Theory and Computer Modeling* (Proc., Europe-U.S. Workshop held at Czech Techn. Univ., Prague, Sept. 21–23, 1994, sponsored by U.S.–NSF and European Union), E & FN Spon, London–New York (pp. 647 + xiv).

E15. Bažant, Z.P., and Rajapakse, Y.D.S., Editors (1999). *Fracture Scaling* (Proc., ONR Workshop on Fracture Scaling, University of Maryland, College Park, June 10–12, 1999; special issue reprinted from *Int. J. of Fracture*, Vol. 95, 1999.), Kluwer Academic Publishers, Dordrecht.

1.4 As Member of Authoring Committee

M1. ASCE Task Committee on Finite Element Analysis of R.C. Str., chaired by A. Nilson (1982), *Finite Element Analysis of Reinforced Concrete*, State-of-the-Art Report, ASCE, New York (545 pp.).

2 State-of-Art Articles and Research Review Articles

S1. Bažant, Z.P. (1966). “Analysis of framed structures, Part II,” *Applied Mechanics Surveys*, ed. by Abramson et al. (Appl. Mech. Reviews), Spartan Books, Washington, D.C., 453–464.

S2. Bažant, Z.P. (1975). “Theory of creep and shrinkage in concrete structures: A precis of recent developments”, *Mechanics Today*, ed. by S. Nemat-Nasser (Am. Acad. Mech.), Pergamon Press 1975, Vol. 2, pp. 1–93

S3. Bažant, Z.P. (1978). “Inelasticity and failure of concrete: A survey of recent progress,” *Proc. of Seminar on “Analisi delle Strutture in Cemento Armato Mediante il Metodo degli Elementi Finiti,”* held to commemorate 50th anniversary of School of Reinf. Concrete, Politecnico di Milano, Italy, 5–59.

S4. Bažant, Z.P. (1981). “Advances in deformation and fracture models for concrete,” Introductory report to *IABSE Colloquium “Advanced Mechanics of Reinforced Concrete,”* held in Delft, 1981. Int. Assoc. for Bridge & Struct. Engrg., Zürich, 9–39.

S5. Bažant, Z.P. (1982). “Friction and cracking in constitutive modeling of geomaterials,” Proc., *Int. Conf. of Soil Mechanics*, Commemorative Meeting of Mexican Soc. of Soil Mechanics, Mexico City, 41–48.

S6. Bažant, Z.P. (1982). “Mathematical models of nonlinear behavior and fracture of concrete,” in *Nonlinear Numerical Analysis of Reinforced Concrete*, ed. by L. E. Schwer, Am. Soc. of Mech. Engrs., New York, 1–25.

S7. Bažant, Z.P., L. Cedolin and P. Gambarova (1982), “Bruchmechanik von Stahlbeton” (Fracture mechanics of reinforced concrete), in *Finite Elemente in der Bruchmechanik*, ed. by H. P. Rossmanith, Springer-Verlag, Wien, 295–332.

S8. ACI Committee 209 (1982). Report No. ACI 209 R-82 on “Prediction of creep, shrinkage and temperature effects in concrete structures,” prepared by D. J. Carreira, Z.P. Bažant and D. E. Branson, *ACI Special Publication SP-76*, Am. Concrete Inst. Detroit, 193–300.

S9. Bažant, Z.P. (1982). “Mathematical models for creep and shrinkage of concrete,” Chapter 7 in *Creep and Shrinkage in Concrete Structures*, ed. by Z.P. Bažant and F. H. Wittmann, J. Wiley & Sons, London, 1982, 163–256.

S10. Subcommittee 7 (1982) (chaired by Z.P. Bažant). “Time dependent effects,” Chap. 6 in State-of-the-Art Report on *Finite Element Analysis of Reinforced Concrete*, prepared by ASCE Str. Div. Task Committee chaired by A. Nilson, Am. Soc. of Civil Engrs., New York, 309–400.

S11. Bažant, Z.P. (1983). “Fracture in concrete and reinforced concrete,” Preprints, IUTAM Prager Symposium on *Mechanics of Geomaterials: Rocks, Concretes, Soils*, ed. by Z.P. Bažant, Northwestern Univ., 281–316.

S12. Bažant, Z.P. (1984). “Numerical simulation of progressive fracture in concrete structures: recent developments,” Preprints, *Int. Conf. on Computer-Aided Analysis and Design of Concrete Structures*, held in Split, Yugoslavia, ed. by E. Hinton, R. Owen and F. Damjanić, University of Wales, Swansea, U.K., 1–17.

S13. Belytschko, T. and Bažant, Z.P. (1984). “Strain-softening materials and finite element solutions,” Proc., *ASME Symposium on Constitutive Equations: Macro, Micro and Computational Aspects*, held at ASME Winter Annual Meeting, New Orleans, ed. by K. Willam, 253–272.

S14. Bažant, Z.P. (1985). “Mechanics of fracture and progressive cracking in concrete structures,” Chap. 1 in *Fracture Mechanics of Concrete: Structural Application and Numerical Calculation*, G. C. Sih and A. DiTommaso, eds., Martinus Nijhoff, Dordrecht & Boston, 1–9.

S15. Bažant, Z.P. (1985). “Fracture in concrete and reinforced concrete,” Chapter 13 in *Mechanics of Geomaterials: Rocks, Concretes, Soils* (Proc. of IUTAM Prager Symposium held at Northw. Univ.) ed. by Z. P. Bažant, J. Wiley, London, 259–303.

S16. Bažant, Z.P. (1986). “Fracture mechanics and strain-softening of concrete,” in *Finite Element Analysis of Reinforced Concrete Structures*, ed. by C. Meyer and H. Okamura, ASCE, New York, 121–150.

S17. Bažant, Z.P. (1986). “Mechanics of distributed cracking,” *Appl. Mech. Reviews ASME*, 39, 675–705.

S18. Bažant, Z.P., and Belytschko, T. (1987). “Strain-softening continuum damage: localization and size effect,” Proc. 2nd Int. Conf. on “*Constitutive Laws of Engineering Materials: Theory and Applications*” (held at Tucson, AZ), ed. by C. S. Desai et al., Elsevier, NY, 11–33.

S19. Bažant, Z.P. (1987). “Nonstationary long-time processes causing loss of serviceability.” Proc. IABSE Colloquium on *Computational Mechanics of Concrete Structures—Advances and Applications* (in Delft, Netherlands, Aug. 1987), Int. Assoc. for Bridge and Struct. Engrg., Zürich, 261–284.

S20. RILEM Committee TC-69 (1987). (Z.P. Bažant, Chairman and Princ. Author), “Conclusions for structural analysis and formulation of standard design recommendations”, *Materials and Structures* (RILEM, Paris) 20, 395–398; reprinted in *ACI Materials Journal* 84 (1987), 578–581, and in *Mathematical Modeling of Creep and Shrinkage of Concrete*, Z.P. Bažant, ed., J. Wiley, Chichester & New York (1988) 385–392.

S21. RILEM Committee TC 69 (1988). (Z. Bažant, Chairman and princ. author), “State of the art in math-

emational modeling of creep and shrinkage of concrete,” in *Mathematical Modeling of Creep and Shrinkage of Concrete*, ed. by Z.P. Bažant, J. Wiley, Chichester and New York, 1988, 57–215; and in prelim. form: “State-of-art report on creep and shrinkage of concrete: mathematical modeling,” Preprints, *Fourth RILEM International Conference on Creep and Shrinkage of Concrete*, 1986, ed. by Z.P. Bažant, 41–80.

S22. Bažant, Z.P. (1989). “Advances in material modeling of concrete”, Transactions, *Tenth International Conference on Structural Mechanics in Reactor Technology (SMiRT10)*, Anaheim, CA, August 1989, Vol. A, Principal Division Lectures, ed. by A. H. Hadjian, 301–330.

S23. Bažant, Z.P. (1990). “Recent advances in failure localization and nonlocal models,” in *Micromechanics of Failure of Quasi-Brittle Materials* (Preprints, Conf. held at University of New Mexico, Albuquerque), ed. by S. P. Shah, S. E. Swartz and M. L. Wang, Elsevier, London, 1990, pp. 12–32.

S24. Bažant, Z.P., and Mazars, J. (1990). “France-U.S. Workshop on Strain Localization and Size Effect Due to Cracking and Damage,” *ASCE J. of Engrg. Mech.* 116 (6), 1412–1424.

S25. ACI Committee 446, Fracture Mechanics (Z.P. Bažant—Chairman and Princ. Author) (1992). “Fracture mechanics of concrete: Concepts, models and determination of material properties.” Special publication, ACI 446, 1R-91, American Concrete Institute, Detroit, MI., 1991 (146 pp.); reprinted in *Fracture Mechanics of Concrete Structures*, ed. by Z.P. Bažant, Elsevier, London, 1–140.

S26. Bažant, Z.P. (1993). “Current status and advances in the theory of creep and interaction with fracture.” Proc., *5th International RILEM Symposium on Creep and Shrinkage of Concrete (ConCreep 5)*, held at U.P.C., Barcelona, September, ed. by Z.P. Bažant and I. Carol, E & FN Spon, London, 291–307.

S27. Bažant, Z.P., Xi, Y.-P., Baweja, S., and Carol, I. (1993). “Preliminary guidelines and recommendations for characterizing creep and shrinkage in structural design codes.” Proc., *5th International RILEM Symposium on Creep and Shrinkage of Concrete (ConCreep 5)*, held at U.P.C., Barcelona, September, ed. by Z.P. Bažant and I. Carol, E & FN Spon, London, 805–829.

S28. Bažant, Z.P. (1994). “Creep and thermal effects in concrete structures: A conspectus of some new developments.” Proc., *Computational Modelling of Concrete Structures (EURO-C)*, held at Innsbruck, Austria, March, Pineridge Press, 461–480.

S29. Bažant, Z.P., and Jirásek, M. (1994). “Damage nonlocality due to microcrack interactions: statistical determination of crack influence function.” *Fracture and Damage in Quasibrittle Structures: Experiment, Theory and Computer Modeling* (Proc., Europe-U.S. Workshop held at Czech Techn. Univ., Prague, Sept. 21–23, 1994, sponsored by U.S.-NSF and European Union), ed. by Bažant, Z.P., Bittnar, Z., Jirásek, M., and Mazars, J., E. & FN Spon, London-New York, 3–17.

S30. Bažant, Z.P. (1995). “Scaling theories for qua-

sibrittle fracture: Recent advances and new directions.” in *Fracture Mechanics of Concrete Structures* (Proc., 2nd Int. Conf. on Fracture Mech. of Concrete and Concrete Structures (FraMCoS-2), held at ETH, Zürich), ed. by F.H. Wittmann, Aedificatio Publishers, Freiburg, Germany, 515–534.

S31. Bažant, Z.P. (1997). “Recent advances in brittle-plastic compression failure: damage localization, scaling and finite strain.” (Plenary keynote lecture) *Computational Plasticity: Fundamentals and Applications*. Proc., 5th Int. Conf., COMPLAS-5, held in Barcelona), D.R.J. Owen, E. Oñate and E. Hinton, Eds., Int. Center for Num. Meth. in Engrg., Barcelona, 3–19.

S32. Bažant, Z.P. (1997). “Modeling of concrete behavior—state of the art.” *Trans., 14th Int. Conf. on Struct. Mech. in Rector Technology (SMiRT-14)* (held in Lyon), ed. M. Livolant, Plenary Lectures Volume, 49–74.

S33. Bažant, Z.P. (1997). “Prediction of concrete creep and shrinkage: Past, Present and Future.” *Proc., Joint WANO/OECD-NEA Workshop on Prestress Losses in NPP (Nuclear Power Plant) Containments*, org. by EDF/IPSN (Electricité de France), held at Civaux NPP (Poitiers), France, publ. by OECD Nuclear Energy Agency, pp. 33–48.

S34. Bažant, Z.P., and Chen, E.-P. (1997). “Scaling of structural failure.” *Applied Mechanics Reviews ASME* 50 (10), 593–627; transl. in *Advances in Mechanics (China)* 29 (3), 383–433.

S35. Bažant, Z.P. (1998). “Size effect in tensile and compression fracture of concrete structures: computational modeling and design.” *Fracture Mechanics of Concrete Structures* (Proc., 3rd Int. Conf., FraMCoS-3, held in Gifu, Japan), H. Mihashi and K. Rokugo, eds., Aedificatio Publishers, Freiburg, Germany, 1905–1922.

S36. Bažant, Z.P. (1999). “Structural stability.” *International Journal of Solids and Structures* 37 (200), 55–67; special issue of invited review articles on *Solid Mechanics* edited by G.J. Dvorak for U.S. Nat. Comm. on Theor. and Appl. Mech., publ. as a book by Elsevier Science, Ltd.

S37. Bažant, Z.P. (1999). “Size effect.” *International Journal of Solids and Structures* 37 (200), 69–80; special issue of invited review articles on *Solid Mechanics* edited by G.J. Dvorak for U.S. Nat. Comm. on Theor. and Appl. Mech., publ. as a book by Elsevier Science, Ltd.

S38. Bažant, Z.P. (1999). “Size effect on structural strength: a review.” *Archives of Applied Mechanics* (Ingenieur-Archiv, Springer Verlag) 69, 703–725.

3 Research Articles in Refereed Journals and Book Chapters

1958

1. Bažant, Z.P. (1958). “Analysis of skew plates with free boundaries by relaxation method” (in Czech), *Inženýrské Stavby*, 6, 437–444.

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2. Bažant, Z.P. (1959/60). “Anwendung der Relax-

ationsmethode mit veränderlichem Belastungsglied für die Berechnung der schiefen Platten" (Use of relaxation method with variable load term for skew plate analysis), *Wissenschaftliche Zeitschrift der Technischen Hochschule Dresden*, 9, 391–400.

1960

3. Bažant, Z.P. (1960). "Relaxation method with variable load term and its use in plate and torsion problems" (in Czech with English summary), *Aplikace Matematiky ČSAV*, 5, 458–475.

4. Bažant, Z.P. (1960). "Mechanics and new designs of safety ski bindings" (in Czech), *Teorie a Praxe Tělesné Výchovy a Sportu*, 8, 562–570.

1961

5. Bažant, Z.P. (1961). "Analysis of frames with bars subjected to skew bending" (in Czech), *Inženýrské Stavby*, 9, 225–228.

6. Bažant, Z.P. (1961). "Analysis of influence lines of continuous frames with hinges at midspans" (in Czech), *Inženýrské Stavby*, 9, 344–346.

7. Bažant, Z.P. (1961). "Effect of creep and shrinkage in statically indeterminate structures with concrete of nonuniform age." (in Czech), *Inženýrské Stavby*, 9, 462–532.

8. Bažant, Z.P. (1961). "Beitrag zur Differenzenlösung schiefer Platten und eine neue Art der Relaxationsmethode." (On finite difference analysis of skew plates and a new type of relaxation method), *Bauplanung-Bautechnik* (Berlin), 16, 24–27, 82–86.

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9. Bažant, Z.P. (1962). "Evaluation of friction losses of prestressing force in curved tendons according to their extension at tensioning" (in Czech), *Inženýrské Stavby*, 10, 290–293.

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11. Novotný, V., and Bažant, Z.P. (1963). "An improved prestressing system for bridges concreted or assembled by segmental cantilevering" (in Czech), *Inženýrské Stavby*, 11, 11–13.

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12. Bažant, Z.P. (1964). "Influence lines of horizontally curved bridges" (in Czech with English summary), *Stavebnický Časopis SAV*, 12, 18–39.

13. Bažant, Z.P. (1964). "Proposal of an efficient system of space arrangement of rubber bearings of bridge girders" (in Czech), *Inženýrské Stavby*, 12, 114–115.

14. Bažant, Z.P. (1964). "Approximate methods of analysis of creep and shrinkage of complex nonhomogeneous structures and use of computers" (in Czech with English summary), *Stavebnický Časopis SAV*, 12, 414–431.

15. Bažant, Z.P. (1964). "Time-interaction of statically indeterminate structures and subsoil" (in Czech with En-

glish summary), *Stavebnický Časopis SAV*, 12, 542–558.

1965

16. Bažant, Z.P. (1965). "Mathematische Ermittlung der rheologischen Eigenschaften von glasfaserverstärkten Platten für die Berechnung von Konstruktionen" (Mathematical formulation of rheological properties of glass fiber reinforced plastics) *Plaste und Kautschuk* (Leipzig), 12, 592–599.

17. Bažant, Z.P. (1965). "Nonuniform torsion of thin-walled bars of variable cross section" *Publications, International Association for Bridge and Structural Engineering* (IABSE, Zürich), 25, 245–267.

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34. Bažant, Z.P. (1968). "Effect of folding of reinforcing fibers on the elastic moduli and strength of composite materials" (in Russian), *Mekhanika Polimerov* (Riga), 4, 314–321.

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42. Bažant, Z.P. (1970). "Numerical analysis of creep of an indeterminate composite beam." *Journal of Applied Mechanics*, Transactions ASME, Ser. E, 37, 1161–1164.

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