PUBLICATIONS OF ZDENĚK P. BAŽANT

August 5, 2019

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; 2nd. ed. Dover Publications, New York 2003 (1011 pp. + xxiv pp.); 3rd ed. World Scientific Publishing, Singapore–New Jersey–London 2010.

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.) (2nd printing Pearson Education, Edinburgh, 2002).

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. Jirásek, M., and Bažant, Z.P. (2002). *Inelastic Analysis of Structures.* J. Wiley & Sons, London and New York (textbook and reference volume, 735 + xviii pp.).

B6. Bažant, Z.P. (2002). *Scaling of Structural Strength.* Hermes Penton Science (Kogan Page Science), London; 2nd updated ed., Elsevier, London 2005 (Errata: www.civil.northwestern.edu/people/bazant.html) (French translation (with updates), *Introduction aux effets d' échelle sur la résistance des structures*, Hermès Science Publ., Paris 2004).

B7. Bažant, Z.P., and Le, Jia-Liang (2017). *Probabilistic Mechanics of Quasibrittle Structures: Strength, Lifetime, and Size Effect.* Cambridge University Press, Cambridge, U.K. (ISBN 978-1-107-15170-3).

B8. Bažant, Z.P., and Jirásek, M. (2018). *Creep and Hygrothermal Effects in Concrete Structures.* Springer, Dordrecht, Netherlands; DOI 10.1007/978-94-024-1138-6; ISBNs 978-9-40-241138-6, 978-9-40-241136-2 (921 + 50 pp.)

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. & Conr. 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, Chichester, 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.

E16. Ulm, F.-J., Bažant, Z.P., and Wittmann, F.H., Editors (2001). *Creep, Shrinkage and Durability Mechanics of Concrete and Other Quasi-Brittle Materials.* (Proc., 6th Intern. Conf., ConCreep-6, held at MIT, Cambridge), Elsevier, Amsterdam 2001 (811 + xviii pp.)

E17. Qu, Jianmin, and Bažant, Z.P., Guest Editors (2002). *A Volume in Honor of Jan D. Achenbach*, special issue of Int. J. of Solids and Structures 39 (21–22, Oct.–Nov.), Pergamon Press (Elsevier Science Ltd.).

E18. Bažant, Z.P., Carol, I., and Steinmann, P., Guest Editors (2003). *Damage and Failure Analysis of Materials*, special isssue of Int. J. of Engrg. Science 41 (13–14, August), Pergamon Press (Elsevier Science Ltd.)

E19. Bažant, Z.P., Christensen, R.A., and Torquato, S., Guest Editors (2003), *Advances in Composite Materials—A Volume in Honor of George G. Dvorak*, special issue of Int. J. of Solids and Structures 40, Pergamon Press (Elsevier Science Ltd.).

E20. Xi, Y., Bažant, Z.P., Pijaudier-Cabot, G., and Bittnar, Z., Guest Editors (2005). *Model-Based Simulation of Durability of Materials and Structures*, special issue of *J. of Materials Engineering ASCE* 17 (3), 239–369 (with Editorial, pp. 239–240).

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*, Z.P. Bažant and F. H. Wittmann, eds., 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 Win-

ter 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, pp. 1–94.

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.

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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.P. Bažant, Chairman and princ. author). "Mathematical Models for Structural Creep Analysis", in *Mathematical Modeling of Creep and Shrinkage of Concrete*, ed. by Z.P. Bažant, J. Wiley, pp.99–215 (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, 4l–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, 1991 (146 pp.). Reprinted in *Fracture Mechanics of Concrete Structures*, ed. by Z.P. Bažant, Elsevier, London, 1–140 (see P90).

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, Z.P. Bažant and I. Carol, eds., 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.

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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 quasibrittle fracture:vRecent 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.

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

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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.

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S39. Bažant, Z.P., and Baweja, S. (2000). "Creep and shrinkage prediction model for analysis and design of concrete structures: Model B3." *Adam Neville Symposium: Creep and Shrinkage—Structural Design Effects*, ACI SP–194, A. Al-Manaseer, ed., Am. Concrete Institute, Farmington Hills, Michigan, 1–83.

S40. Brocca, M. and Bažant, Z.P. (2000). "Microplane constitutive model and metal plasticity." *Applied Mechanics Reviews, ASME* 53 (10), 265–281.

S41. Bažant, Z.P. (2000). "Stability of elastic, anelastic and disintegrating structures: a conspectus of main results." *Applied Mathematics and Mechanics (Zeitschrift für Angewandte Mathematik und Mechanik—ZAMM)* 80 (11/12), 709–732 (Ludwig Prandtl's 125th anniversary issue).

S42. Bažant, Z.P., and Ferretti, D. (2001). "Asymptotic temporal and spatial scaling of coupled creep, aging, diffusion and fracture processes." *Creep, Shrinkage and Durability Mechanics of Concrete and Other Quasi-Brittle Materials.* (Proc., 6th Intern. Conf., ConCreep-6, held at MIT, Cambridge), F.-J. Ulm, Z.P. Bažant and F.H. Wittmann, eds., Elsevier, Amsterdam 2001, 121–145.

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S46. Bažant, Z.P., Y.D.S. Rajapakse, D.H. Allen, R.Ballarini, H.D. Espinosa, H. Gao, R. Gettu, M. Jirásek, G. Pijaudier-Cabot, J. Planas and F.-J. Ulm (2002). "Report on ONR Workshop on Fracture Scaling." *Int. J. of Fracture* 113, 345–366.

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S48. Bažant, Z.P., and Jirásek, M. (2002). "Nonlocal integral formulations of plasticity and damage: Survey of progress." *ASCE J. of Engrg. Mechanics* 128 (11), 1119–1149 (invited ASCE 150th anniversary article).

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3 Contributed Wikipedia Articles

W1. "Size effect on structural strength." Contributed to *Wikipedia* in 2012 by Z.P. Bažant (http://en.wikipedia.org/wiki/).

W2. "Creep and shrinkage of concrete and their effects in structures." Contributed to *Wikipedia* in 2012 by Z.P. Bažant (http://en.wikipedia.org/wiki/).

W3. "Energy-Consistent Objective Stress Rates." Contributed to *Wikipedia* in 2013 by Z.P. Bažant (with J. Vorel) (http://en.wikipedia.org/wiki/).

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4 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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1963

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