



URP 526: Scenario Planning

Fall 2018

“Memory of the past, observation of the present, foresight of the future are indispensable. But they are indispensable *to* a present liberation, an enriching growth of action.”
– John Dewey, *Human Nature and Conduct* (1922 ed., p. 265)

Course Staff and Schedule

Instructor: Prof. Robert Goodspeed (rgoodspe at umich.edu)
Office: 2384 Taubman Wing, Art & Architecture Building
Office Hours: Friday 2:00-4:00 PM (sign up by Canvas link)
Credits: 3
Prerequisites: Intro. GIS course suggested, but not required.

Class Schedule: Tuesday and Thursday, 4:00 – 5:30 PM, Room 2222 Art & Architecture Building

Summary and Learning Objectives

Growing uncertainty about the future has made considering the long-term implications of public decisions more difficult than ever. All planning must now consider uncertainties associated with forces like climate change, new technologies, economic restructuring, and changing social preferences. Given the failure of conventional methods of prediction, professionals are increasingly turning to scenario planning to consider future uncertainty. Instead of proposing only a most likely or must desired future scenario, practitioners using scenario planning construct multiple possible futures. Doing so requires combining art with science: applying not only creativity but also rigorous analysis. The goal of scenario planning is to make better plans and decisions by challenging stakeholder assumptions and encouraging learning.

The goal of the course is to introduce students to this exciting professional technique, as well as provide hands-on experience using GIS-based planning support systems (PSS) used to implement scenario planning. This course contains four modules: (1) an overview of scenario planning theory and concepts, (2) a discussion of the three main approaches to use these ideas in urban planning, (3) an examination of some of the modeling tools used for scenario planning, and (4) an opportunity to use leading PSS tools to construct and analyze scenarios. The course will involve readings, discussion, and a series of individual and group assignments which culminate in detailed student-generated scenarios for sites in Ann Arbor.

Student Audience and Prerequisites

The course is designed for students from all concentrations in the Masters of Urban Planning program, as well as students interested in this planning method from across the University. Although UP 506 (Intro. to GIS) is a prerequisite, the specific tools used this year do not require use of ArcMap, so this prerequisite will be suggested but not required.

Materials

- The course will use the UrbanFootprint online planning tool. Students will need to purchase access for around \$40.
- All readings will be provided on canvas. However, the course formerly used the following

textbook, which remains as an optional text: Hopkins, Lewis D., and Marisa Zapata. 2007. *Engaging the Future: Forecasts, Scenarios, Plans, and Projects*. Cambridge, Mass.: Lincoln Institute of Land Policy. (Referred to below as “ETF”)

Course Overview and Assignments

Scenario planning has emerged as an influential professional technique in urban planning and related fields since it integrates diverse forms of knowledge, systems analysis, future-oriented thinking, and a consideration of uncertainty. Scenario planning most accurately refers to a diverse area of planning practice which involves a variety of assumptions, tools, and methods. As a consequence, the course has two primary learning objectives for graduate students in planning: to cultivate *reflective practitioners*, and to provide specific technical skills to empower students to implement these ideas themselves or by working with a team. The assignments are weighted as follows:

- **Class Attendance and Participation** (5%)
- **Discussion Posts:** *Before* any Tuesday class, students should post 250-word response, reaction, or question emerging from the materials to the Canvas forum. These are due by 5PM on the day before. Students must complete comments for all but one week for each module, a total of 10. Posts will be graded according to a separate rubric. (20%)
- **Project Assignments:** See below. (50%)
- **Other Assignments:** Described below. (25%)

Reflective Practitioners: Theory, Method, and Cases

The primary goal of this class is to cultivate *reflective practitioners* (Schön 1983), who are prepared to implement forms planning appropriate to the questions and problems they will face in their lives and as professionals. To do this, the course provides an introduction to theories, debates, and modeling tools used in scenario planning. In many advanced scenario planning projects, urban planners involved work with consultants and multifunctional teams to integrate scenario creation, stakeholder engagement, and modeling and analysis. Therefore, the course examines several advanced modeling tools in detail, in order to empower future planners to be critical and effective users of tools in practice.

Technical Skills: Ann Arbor Project

The second aim of this course is to provide specific technical skills to implement one approach to scenario planning feasible to implement within the confines of the course. As summarized below, working both individually and in groups, the class will collectively create several qualitative exploratory scenarios for the future of Ann Arbor, which take the form of a written narrative. Then, working in groups, they will develop concrete land-use scenarios for particular sites which illustrate these broader scenarios.

Assignments:

The schedule and diagram below provide a description of how these assignments are related, and are linked to the course readings and cases.

Project Assignments

- **Trends & Stakeholder Reports:** Each student is asked to prepare summary slides exploring stakeholder views and related issues.
- **Scenario Narrative Development:** Students work as a group in class to construct scenario narratives
- **Building Prototypes:** Working individually, students construct building prototypes.
- **Site Scenarios & Analysis:** Working in groups, students present their site-level scenarios.
- **Scenario Visualization & Communication:** Students will work in groups to produce representations of their scenarios, which will be used for the final presentation. This includes charts, tables, maps, and/or 3D representations.

Other Assignments

- **Final Presentation and Report:** Using the outcomes from the previous labs, the class as a group prepares and deliver a summary presentation open to Taubman College and invited stakeholders.
- **Futures Method Report:** Working in assigned groups, the students are asked to review materials for one of several alternative planning methods: visioning, strategic planning, general or comprehensive planning, forecasting, and utopian imagination. This assignment reinforces the unique nature of scenario planning, but also begin to explore how ideas might be fruitfully combined in practice.

Course Policies

In addition to those specified here, policies which may apply to students in this class include those of the Urban and Regional Planning Program, Taubman College, students' home academic units, and the University.

Academic Integrity

The Urban and Regional Planning Program is part of the Rackham Graduate School. Policies that apply to students in this course may include the Rackham Academic and Professional Integrity Policy, The Taubman College Academic Policies, and other University policies.

Taubman College Policy on Plagiarism is: *"Plagiarism is knowingly presenting another person's ideas, findings, images or written work as one's own by copying or reproducing without acknowledgement of the source. It is intellectual theft that violates basic academic standards. In order to uphold an equal evaluation for all work submitted, cases of plagiarism will be reviewed by the individual faculty member and/or the Program Chair. Punitive measures will range from failure of an assignment to expulsion from the University."*

Accommodations for Students with Disabilities

It is Taubman College policy to "meet the educational needs of all persons, including those with physical or perceptual limitations, who are interested in the study of architecture, urban planning and/or urban design." If you think you need an accommodation for a disability, please let me know at your earliest convenience. Some aspects of this course, the assignments, the in-class activities, and the way the course is usually taught may be modified to facilitate your participation and progress. As soon as you make me aware of your needs, we can work with the Services for Students with Disabilities (SSD) office to help us determine appropriate academic accommodations. SSD (734-763-3000; <http://ssd.umich.edu>) typically recommends accommodations through a Verified Individualized Services and Accommodations (VISA) form. Any information you provide is private and confidential and will be treated as such.

Statement on Diversity, Equity, and Inclusion

Taubman College affirms the principles of diversity, equity, and inclusion as we organize resources and priorities that align with our values. We seek to have a diverse group of persons at all levels of the college - students, faculty, staff and administrators - including persons of different race and ethnicity, national origin, gender and gender expression, socioeconomic status, sexual orientation, religious commitment, age, and disability status. We strive to create a community of mutual respect and trust, a community in which all persons and their respective backgrounds, identities, and views are allowed to be made visible and communicated without the threat of bias, harassment, intimidation, or discrimination.

Resources

Additional references are provided below for many of the class sessions. This section provides additional resources to learn about research and practice of scenario planning.

Journals

Environment and Planning B (<http://www.envplan.com/B.html>)

Computers, Environment, and Urban Systems (<http://www.journals.elsevier.com/computers-environment-and-urban-systems/>)

Futures (<http://www.journals.elsevier.com/futures/>)

Technological Forecasting and Social Change (<http://www.journals.elsevier.com/technological-forecasting-and-social-change/>)

Professional Organizations

Consortium for Scenario Planning (<http://www.scenarioplanning.io/>)

Computers in Urban Planning and Urban Management (CUPUM)

Biannual international conference of scholars and practitioners involved in urban modeling and analysis.

2019 – Wuhan, China

2017 – Adelaide, Australia (<http://www.unisa.edu.au/cupum>)

2015 – Boston, Mass. (<http://cupum2015.mit.edu>)

2013 – Utrecht, Netherlands (<http://cupum2013.geo.uu.nl>)

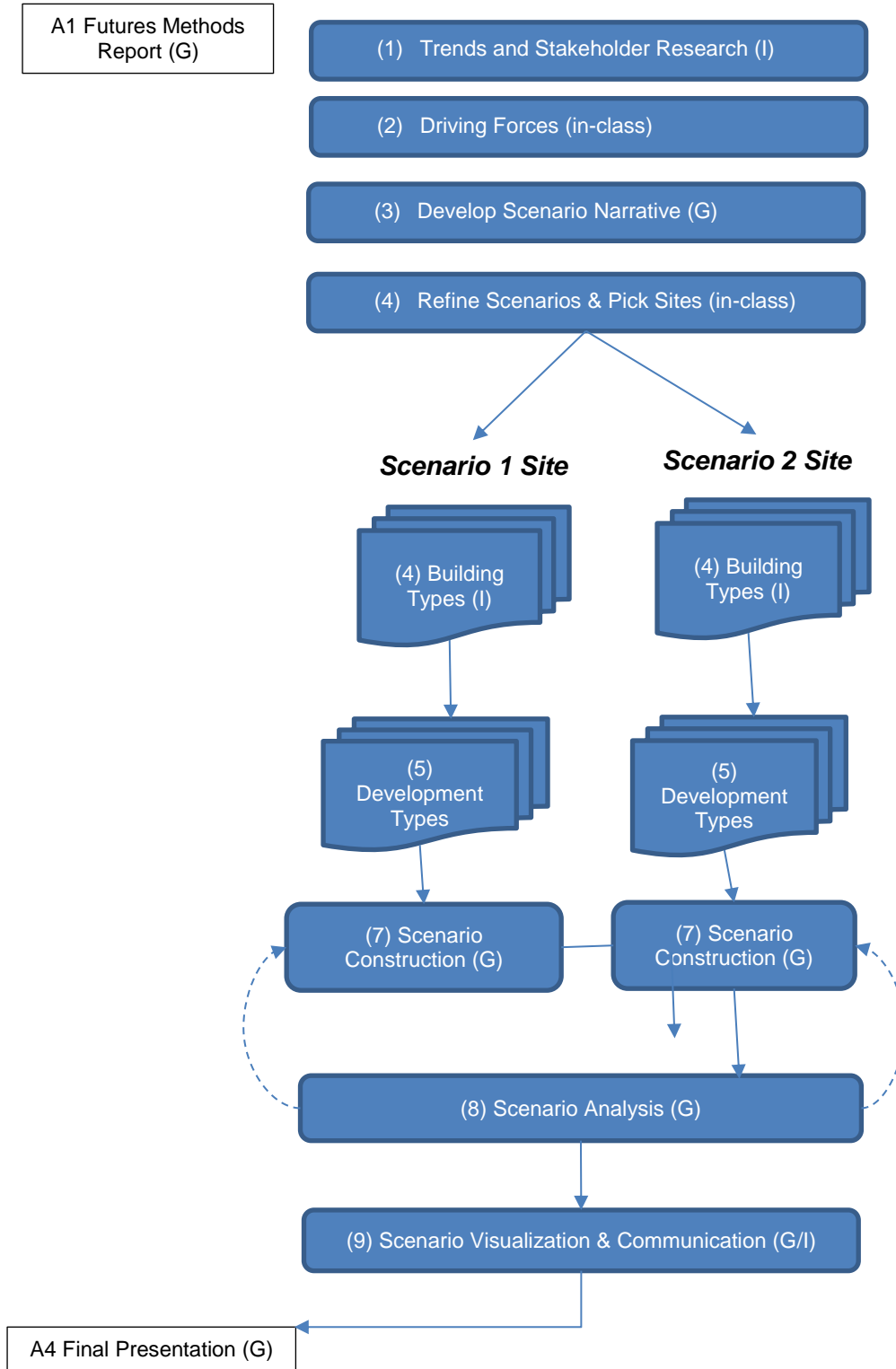
U.S. Federal Highway Administration Scenario Planning Group

http://www.fhwa.dot.gov/planning/scenario_and_visualization/scenario_planning/

Schedule Overview

Week	Modules	Tuesday	Thursday	Assignments
1	1: Scenario Planning Concepts	Introduction	Introduction Seminar	
2		Complexity	<i>Expanded Horizons (no class)</i>	
3		SP Origins and Concepts	Project Introduction	
4		Thinking About the Future	Futures Methods	Futures Methods Report
5		Scenarios in Urban Planning	Trends & Stakeholder Research	Trends & Stakeholder Research
6	2: Approaches	Vision-Focused	Driving Forces	
7		<i>Fall Break</i>	Decision-Focused (seminar class)	
8		Exploratory	Assess Uncertainties & Identify Axes	Write Scenario Narrative (after)
9		Effective Practice	Scenario Discussion & Spatial Impacts	Develop Buildings
10	3: Modeling Urban Scenarios	Intro	Development Type Construction (groups)	
11		Generic Systems Models	Create & Analyze Site-Level Scenarios	Site Scenarios & Analysis
12		Place-Type Analysis	<i>Thanksgiving Break</i>	
13		Urban Systems Models	Draft Presentation	
14	4. Advancing Practice & Final Presentations	Advancing Practice	Evaluation Discussion	
15		Class Wrap-up		
Final Presentation, Wed., Dec. 19, 8:00 – 10:00 AM				

Overview of Project Work



Key
(G) – Group Assignment
(I) – Individual Assignment

Schedule

Module 1: Why Scenario Planning?

Week 1 – Introduction and Course Overview

Course overview and student introductions. Discussion on Dewey's argument for future-oriented action and the need for techniques to introduce intelligence.

Tues., Sept. 4: Course and Student Introductions

1. Dewey, John. 1922. "Section IX: The Present and the Future" in *Human Nature and Conduct: An Introduction to Social Psychology*. New York: Holt. Available online via Project Gutenberg at: <http://www.gutenberg.org/files/41386/41386-h/41386-h.htm#Pg265>

Thurs., Sept. 6: Introduction Seminar

1. Isserman, Andrew M. 1985. "Dare To Plan: An Essay On The Role of The Future in Planning Practice and Education." *Town Planning Review* 56 (4):483.
2. Wiechmann, Thorsten. 2008. "Errors Expected—Aligning Urban Strategy with Demographic Uncertainty in Shrinking Cities." *International Planning Studies* 13 (4):431-446.
3. Gwinnett Scenarios

Week 2 – Planning and Urban Complexity

Tues., Sept. 11: What is a City?

1. *Shaping Places*, Preface and Chapter 1
2. Chapter 22, "The kind of a problem a city is," in Jacobs, Jane. 1961. *The Death and Life of Great American Cities*. New York: Random House, Inc.
3. Marshall, S. (2012). "Planning, Design and the Complexity of Cities." In J. Portugali, H. Meyer, E. Stolk, & E. Tan (Eds.), *Complexity Theories of Cities Have Come of Age: An Overview with Implications to Urban Planning and Design* (pp. 191-205). Berlin, Heidelberg: Springer Berlin Heidelberg.
4. Meadows, Donella. 1999. "Leverage Points: Places to Intervene in a System." Donella Meadows Institute.

Thurs., Sept. 13 – No Class (Expanded Horizons)

Additional Readings:

- Roo, Gert de, Jean Hillier, and Joris van Wezemael. 2012. *Complexity and planning : systems, assemblages and simulations, New directions in planning theory*. Farnham, Surrey ; Burlington, VT: Ashgate.
- Portugali, Juval, Han Meyer, Egbert Stolk, Ekim Tan. 2012. *Complexity Theories of Cities Have Come of Age An Overview with Implications to Urban Planning and Design*. Berlin, Heidelberg: Springer Berlin Heidelberg. Available online at: <http://dx.doi.org/10.1007/978-3-642-24544-2>
- Portugali, Juval. 2011. *Complexity, Cognition and the City*. Berlin, Heidelberg: Springer-Verlag Berlin Heidelberg.
- Portugali, Juval. 1999. *Self-organization and the city*. New York: Springer.

Week 3 – Scenario Planning Origins and Concepts

This week examines the basic outlook shared by all scenario planning approaches.

Tues., Sept. 18: Lecture and Discussion

1. *Shaping Places*, Ch. 2.
2. "Chapter 6: The Uncertain Environment," from Van der Heijden, Kees. *Scenarios: The Art of Strategic Conversation*. 2nd Edition. 2005. London: John Wiley & Sons.
3. Schoemaker, P.J.H. 1995. "Scenario Planning: A Tool for Strategic Thinking." *Sloan Management Review* 36:25-25.

4. Börjeson, L., et al. 2006. "Scenario Types and Techniques: Towards a User's Guide." *Futures* 38, pp. 723-739.

Thurs., Sept. 20: Project Introduction

Additional Readings:

There is a large amount of published about scenario planning in the management and futures studies literature. Here are several additional references if you are interested in exploring this area further.

- Schwartz, Peter. 1991. *The Art of the Long View*. New York, Doubleday Currency.
- Ralston, Bill, and Ian Wilson. 2006. *The Scenario-Planning Handbook: A Practitioner's Guide to Developing and Using Scenarios to Direct Strategy in Today's Uncertain Times*. Australia; Mason, Ohio: Thomson/South-Western.
- Chermack, Thomas J. 2011. *Scenario Planning in Organizations: How to Create, Use, and Assess Scenarios*. Berrett-Koehler Publishers.
- Varum, Celeste Amorim, and Carla Melo. 2010. "Directions in scenario planning literature – A review of the past decades." *Futures* 42 (4):355-369.

Week 4 – Thinking About the Future: Scenario Planning and Its Alternatives

Scenario planning is only one way planners have thought about the future. First we discuss some of the basic concepts, considering ideas such as visioning, forecasting, scenarios, plans, and project implementation, and discuss how they relate to one another. On Thursday, students present in small groups about the method they have chosen.

Tues., Sept. 25: Lecture and Discussion, "Thinking About the Future in Planning"

1. *Shaping Places*, Ch. 3
2. Hopkins and Zapata, ETF Ch. 1
3. Myers, D., and A. Kitsuse. 2000. "Constructing the Future in Planning: A Survey of Theories and Tools." *Journal of Planning Education and Research* 19 (3):221.
4. Baum, Howell S. 1999. "Forgetting to plan." *Journal of Planning Education and Research* 19 (1):2-14.

Additional Readings

- Dalton, Linda C. 2001. "Thinking about Tomorrow: Bringing the Future to the Forefront of Planning." *Journal of the American Planning Association* 67 (4):397-401.
- Cole, S. 2001. "Dare To Dream: Bringing Futures Into Planning." *Journal of the American Planning Association* 67 (4):372-383.

Thurs., Sept. 27: Futures Method Reports (due in class)

Visioning

- Ames, Steven C. 1993. *A Guide to community visioning : hands-on information for local communities*. Portland, OR: Oregon Chapter, American Planning Association.
- Helling, Amy. 1998. "Collaborative Visioning: Proceed With Caution!: Results From Evaluating Atlanta's Vision 2020 Project." *Journal of the American Planning Association* 64 (3):335-349.
- Shipley, Robert, and Ross Newkirk. 1998. "Visioning: Did Anybody See Where It Came from?" *Journal of Planning Literature* 12 (4):407-416.
 - Shipley, R. 2002. "Visioning in planning: is the practice based on sound theory?" *Environment and Planning A* 34 (1):7-22.
 - Shipley, R., and R. Newkirk. 1999. "Vision and Visioning in Planning: What do These Terms Really Mean?" *Environment and Planning B: Planning and Design* 26 (4):573-591.

Strategic Planning

- Bryson, John M., and Robert C. Einsweiler. 1988. *Strategic planning : threats and opportunities for planners*. Chicago, Ill.: Planners Press, American Planning Association. (Chapter 2)

- Albrechts, L. 2004. "Strategic (spatial) planning reexamined." *Environment and Planning B* 31:743-758.
- Bryson, John M. 2004. *Strategic Planning for Public and Nonprofit Organizations: A Guide to Strengthening and Sustaining Organizational Achievement*. 3rd ed. San Francisco: Jossey-Bass.
- Kaufman, Jerome L, and Harvey M Jacobs. 1987. "A Public Planning Perspective on Strategic Planning." *Journal of the American Planning Association* 53 (1):23-33.

General and Comprehensive Planning

- Kent, T. J. 1964. *The urban general plan*. San Francisco: Chandler Pub. Co.
- Kelly, Eric D., and Barbara Becker. 2000. *Community Planning: An Introduction to the Comprehensive Plan*. Washington, D.C.: Island Press.

Forecasting

- Isserman, ETF Ch. 9
- Wachs, M. 2001. "Forecasting versus Envisioning: A New Window on the Future." *Journal of the American Planning Association* 67 (4):367-372.
- Næss, Petter, and Arvid Strand. 2012. "What Kinds of Traffic Forecasts are Possible?" *Journal of Critical Realism* 11 (3):277-295.
- Tetlock, Philip E., and Dan Gardner. 2015. *Superforecasting: The Art And Science Of Prediction*. Crown.

Utopian Imagination

- Hoch, Charles. 2014. "Utopia, scenario and plan: A pragmatic integration." *Planning Theory*. Published online before print January 20, 2014. doi: 10.1177/1473095213518641
- Thun, Geoffrey, Kathy Velikov, Colin Ripley and Dan McTavish. 2015. *infra eco logi urbanism -- A Project for the Great Lakes Megaregion*. Park Books.
- Anonymous author. Freshwater Railway: Southeast Michigan's Regional Rail System. Available online: <http://www.fwrail.org/>
- Introduction and Section 2, "Frank Lloyd Wright," in Fishman, Robert. 1977. *Urban Utopias in the Twentieth Century: Ebenezer Howard, Frank Lloyd Wright, and Le Corbusier*. New York: Basic Books.

Week 5 – Scenarios in Urban Planning

Tues., Oct. 2: Adapting Scenarios for Urban Planning

1. *Shaping Places*, Ch. 4
2. Avin, Uri P., and Jane L. Dembner. 2001. Getting Scenario-Building Right. *Planning* 67 (11):22.
3. Tompkins, Emma L, Roger Few, and Katrina Brown. 2008. "Scenario-based stakeholder engagement: incorporating stakeholders preferences into coastal planning for climate change." *Journal of Environmental Management* 88 (4):1580-1592.

Additional Reading:

- Chakraborty, Arnab, and Andrew McMillan. 2015. "Scenario Planning for Urban Planners: Toward a Practitioner's Guide." *Journal of the American Planning Association* 81 (1):18-29. doi: 10.1080/01944363.2015.1038576.
- Khakee, A. 1991. "Scenario Construction for Urban Planning." *Omega* 19 (5):459-469. (novel early application)
- Salewski, Christian. 2012. *Dutch New Worlds: Scenarios in Physical Planning and Design in the Netherlands, 1970-2000*. Rotterdam: 010 Publishers. (documents extensive use of scenarios in Dutch planning)

Thurs., Oct. 4: Trends & Stakeholder Research

Module 2: Approaches to Urban Planning with Scenarios

Week 6: Vision-Focused Projects

Tues., Oct. 9: Vision Scenarios (Guest: Ted Knowlton, Deputy Director, Wasatch Front Regional Council)

1. Matheson, Alan, Jr. 2011. "Envision Utah: Building Communities on Values." In *Regional Planning for a Sustainable America*, edited by Carleton K. Montgomery, 154-167. New Brunswick, New Jersey: Rutgers University Press.
2. Oregon Department of Transportation. 2013. Oregon Scenario Planning Guidelines.

Thurs., Oct. 11: Driving Forces Workshop

Additional Readings:

- Bartholomew, K. 2007. "Land Use-Transportation Scenario Planning: Promise and Reality." *Transportation* 34 (4):397-412.
- U.S. Federal Highway Administration. 2010. *Scenario Planning Guidebook*. (skim) and review FHWA Scenario Planning Website: http://www.fhwa.dot.gov/planning/scenario_and_visualization/scenario_planning/

Week 7: Decision-Focused Projects

Tues., Oct. 16: Fall Break (No class)

Thurs., Oct. 18: Decision Scenarios (Guest: Uri Avin, University of Maryland Center for Smart Growth Research and Education)

1. Chakraborty, Arnab, Nikhil Kaza, Gerrit-Jan Knaap, and Brian Deal. 2011. "Robust Plans and Contingent Plans -- Scenario Planning for an Uncertain World." *Journal of the American Planning Association* 77 (3): 251-266.
2. Avin, Uri. 2007. "Using scenarios to make urban plans." In *Engaging the future: Forecasts, scenarios, plans, and projects*, L. Hopkins and M. Zapata, eds. P. 103-134.
3. Gwinnet Scenarios?

Additional Reading:

- Quay, Ray. 2010. "Anticipatory Governance -- A Tool for Climate Change Adaptation." *Journal of the American Planning Association* 76 (4):496 - 511.

Week 8: Exploratory Projects

Tues., Oct. 23: Exploratory (Speaker forthcoming)

- Marlow, Joe, Hannah Oliver, Ray Quay, and Ralph Marra. 2015. "Integrating Exploratory Scenario Planning Into a Municipal General Plan Update." Working Paper, Cambridge, Mass.
- Townsend, Anthony. 2014. *Re-Programming Mobility: The Digital Transformation of Transportation in the United States*. NYU Wagner Rudin Center for Transportation Policy & Management.
- Zmud, Johanna, Melissa Tooley, Trey Baker, and Jason Wagner. 2015. *Paths of automated and connected vehicle deployment: strategic roadmap for state and local transportation agencies*. Texas A&M Transportation Institute.

Thurs., Oct. 25: Assess Uncertainties & Scenario Axes

Additional Reading:

- Smith, ETF Ch. 5
- Roberts, Eric J. 2014. *Exploratory Scenario Planning: Lessons Learned in the Field*. Lincoln Institute of Land Policy Working Paper. Available online at http://www.lincolninst.edu/pubs/2445_Exploratory-Scenario-Planning

Week 9: Effective Scenario Practice

Tues., Oct. 30: Effective Practice

1. Xiang, Wei-Ning, and Keith C Clarke. 2003. "The Use of Scenarios in Land-Use Planning." *Environment and Planning B: Planning and Design* 30 (6):885-909. doi: doi:10.1068/b2945.
2. Innes, Judith E., and D.E. Booher. 2000. "Indicators for sustainable communities: a strategy building on complexity theory and distributed intelligence." *Planning Theory and Practice* 1 (2):173-186.
3. Chakraborty, A. 2011. "Enhancing the Role of Participatory Scenario Planning Processes: Lessons From Reality Check Exercises." *Futures* 43 (4):387-399.

Thurs., Nov. 1: Scenario Discussion & Spatial Impacts Mapping

Module 3: Modeling Urban Scenarios

Week 10: Intro

Tues., Nov. 6: Modeling Introduction

1. Couclelis, H. 2005. "Where Has The Future Gone? Rethinking the Role of Integrated Land-Use Models in Spatial Planning." *Environment and Planning A* 37 (8):1353-1371.
2. Klosterman, R. E. 2012. "Simple and complex models." *Environment and Planning B: Planning and Design* 39 (1):1-6.

Thurs., Nov. 8: Development Type Construction (groups)

Week 11: Generic Systems Modeling

Tues., Nov. 13: Systems Modeling

1. *Shaping Places*, "Generic Systems Modeling" Section, Ch. 5.
2. Chapter 5, "A Shift of Mind," in Senge, Peter. 2010. *The Fifth Discipline: The Art & Practice of The Learning Organization*. New York: Crown Publishing Group.
3. Zellner, Moira L., Leilah B. Lyons, Charles J. Hoch, Jennifer Weizeorick, Carl Kunda, and Daniel C. Milz. 2012. "Modeling, Learning, and Planning Together: An Application of Participatory Agent-based Modeling to Environmental Planning." *URISA Journal* 24 (1):77-92.

Thurs., Nov. 15: Create & Analyze Site-Level Scenarios

Additional Reading:

- Moira Zellner & Scott D. Campbell (2015) "Planning for deep-rooted problems: What can we learn from aligning complex systems and wicked problems?", *Planning Theory & Practice*, 16:4, 457-478, DOI: 10.1080/14649357.2015.1084360.

Week 12: Place-Type Development and Analysis

Tues., Nov. 20: Place-Type Development and Analysis

1. *Shaping Places*, "Place-Type Development and Analysis" Section, Ch. 5.
2. Allen, Eliot. 2008. "Clicking Toward Better Outcomes: Experience With INDEX, 1994-2006." In *Planning Support Systems for Cities and Regions*, edited by Richard K. Brail, 139-166. Cambridge, Massachusetts: Lincoln Institute of Land Policy.
3. Holway, Jim, C.J. Gabbe, Frank Hebbert, Jason Lally, Robert Matthews, and Ray Quay. 2012. *Opening Access to Scenario Planning Tools*. Policy Focus Report. Cambridge, Mass.: Lincoln Institute of Land Policy. (Chapter 3-6)

Thurs., Nov. 22: Thanksgiving (No class)

Additional Reading:

- California Department of Transportation. 2007. *Assessment of Local Models and Tools for Analyzing Smart-Growth Strategies*. Report.
- Walker, Doug, and Thomas L. Daniels. 2011. *The Planners Guide to CommunityViz: The Essential Tool for a New Generation Of Planning*. Chicago: Planners Press, American Planning Association.
- Fregonese Associates. 2012. Envision Tomorrow Scenario Builder User Guide. Tool website: <http://www.envisiontomorrow.org/>

Week 13: Urban Systems Models & Scenario Planning Evaluation

Tues., Nov. 27: Urban Systems Models

1. Shaping Places, "Urban Systems Models" section, Ch 5.
2. Landis, J.D. 2011. "Urban Growth Models: State of the Art and Prospects." In *Global urbanization*, edited by Eugenie L. Birch and Susan M. Wachter, 126-150. Philadelphia: University of Pennsylvania Press.
3. Waddell, P. 2002. "UrbanSim - Modeling urban development for land use, transportation, and environmental planning." *Journal of the American Planning Association* 68 (3):297-314.
4. Lee, Douglass B. 1973. "Requiem for Large-Scale Models." *Journal of the American Planning Association* 39 (3):163.
5. Lee, Douglass B. 1994. "Retrospective on Large-Scale Urban Models." *Journal of the American Planning Association* 60 (1):35.

Additional Readings:

- Schwarz, N., D. Haase, and R. Seppelt. 2010. "Omnipresent Sprawl? A Review Of Urban Simulation Models With Respect To Urban Shrinkage." *Environment and Planning B: Planning and Design* 37 (2):265-283.

Thurs., Nov. 29: Evaluation

Module 4: Advancing Practice & Final Presentations

Week 14: Advancing Practice

Tues., Dec. 4: Advancing Practice

1. Shaping Places, "Guidelines for Tool Use" section, Ch. 5.
2. Haas Lyons, Susanna, Mike Walsh, Erin Aleman, and John Robinson. 2014. "Exploring regional futures: Lessons from Metropolitan Chicago's online MetroQuest." *Technological Forecasting and Social Change* 82: 23-33.
3. Senbel, Maged, and Sarah P. Church. 2011. "Design Empowerment: The Limits of Accessible Visualization Media in Neighborhood Densification." *Journal of Planning Education and Research* 31 (4): 423-437.

Thurs., Dec. 6: Evaluation

1. *Shaping Places*, Ch. 6
2. Allred, Dustin, and Arnab Chakraborty. 2015. "Do Local Development Outcomes Follow Voluntary Regional Plans? Evidence From Sacramento Region's Blueprint Plan." *Journal of the American Planning Association* 81 (2):104-120. doi: 10.1080/01944363.2015.1067574.

Additional Readings:

- Selin, Cynthia. 2006. "Trust and the illusive force of scenarios." *Futures* 38 (1):1-14.

- te Brömmelstroet, M., and P. M. Schrijnen. 2010. "From planning support systems to mediated planning support: a structured dialogue to overcome the implementation gap." *Environment and Planning B: Planning and Design* 37 (1):3-20.
- Chermack, TJ, and L Van Der Merwe. 2003. "The role of constructivist learning in scenario planning." *Futures* 35 (5):445-460.
- Hulme, Mike, and Suraje Dessai. 2008. "Predicting, deciding, learning: can one evaluate the 'success' of national climate scenarios?" *Environmental Research Letters* 3 (4):045013.
- Goodspeed, Robert. 2017. "An Evaluation Framework for the Use of Scenarios in Urban Planning." Working Paper. Lincoln Institute of Land Policy.

Week 15:

Tues., Dec. 11: Class Wrap-up and Debriefing

1. Shaping Places, Ch. 7