



ARCH 4.625/DUSP 11.378: WATER IN PLANNING, POLICY & DESIGN: A MULTI-SCALE APPROACH

Spring 2013 – Jim Wescoat – wescoat@mit.edu – Seminar 9-12 Tu; 5-216; 9 cr.
JW office hours: usually M & Tu 2-4pm; sign-up on the door of AKPIA office 10-390
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Water poses some of the most challenging problems to societies around the world. It resonates with profound meanings of life, livelihood, beauty, death, and destruction. It inspires architectural, landscape, and planning innovations. It is a fascinating molecule.

This seminar is for graduate students who have a core interest in the role of water in environmental planning, policy, and design. Students should have a water project in mind or underway that requires systematic reading and research, e.g., a master's thesis project, dissertation chapter, design project, or publication. If you are looking for a project, I have ideas for you.

Individual projects will vary a great deal—by discipline, phase of development, scale, and region – but we will have a shared pragmatist philosophy and *multi-scale/multi-level approach*, which proceeds from human experience at the household to global levels. We proceed from the local and the global for two reasons, first because that is the historical progression of water development, and second because the evolution of hierarchical relations between smaller and larger levels of water management have involved continuous political, ethical, and material struggles between local autonomy and regional integration that, in my view, are best understood from the bottom up.

We will have common tasks, organized by scale (or more precisely “level”), and several common seminar readings for discussion each week. I will give short talks on the historiography of each level of water inquiry, with illustrations from the U.S., South Asia, and the wider Islamic realm. Each week will have 1 to 2 student discussion leaders on the topic and common readings.

MIT recently published a Global Environmental Initiative report that included a section on “Design for Water, Landscape and Social Change.” This concept of design is very broad in scope – encompassing

policy design, systems design and research design, as well as environmental design. We will have an opportunity to discuss how your projects may help articulate the Institute's water agenda.

Common tasks: Each of us will begin by identifying the water topic we wish to pursue and write a brief problem statement on why it is important and how we plan to pursue it. We will then prepare "maps" of the levels and scales of inquiry relevant for these projects. Using the problem statement and map as your guide, each person will develop a bibliographic document of citations, web links, maps, datasets, and precedents to help develop your research project.

Thesis completion option: Those who are completing a thesis or thesis proposal may have somewhat different pressures and interests, in which you are trying to complete readings and analysis for different sections of the thesis. In those cases, bi-weekly tasks can be adapted to advance your thesis tasks.

Evaluation: Regular participation in seminar meetings and discussions (20%); discussion leadership (20%); roughly tri-weekly project updates (20%); and final write-up (40%).

Water Reading Group Schedule

Weekly Topics, Readings and Tasks

1. February 5 – *Water Experience and Aims of Inquiry*. This initial meeting introduces the seminar goals, interests, and syllabus. I will offer an approach that is based on a pragmatist philosophy of water inquiry and experience at multiple levels and scales. We will begin to develop draft problem statements and "maps" of your project, along with initial propositions about how it fits within and contributes to wider fields of water research in environmental planning, policy and design.

Common task: Post your initial water problem statement and map on Stellar by February 12th.

Common background readings for the seminar: Wescoat, "Waterscapes and Water Conserving Design," *LA! Journal of Landscape Architecture (India)*, Volume 25, fall 2009; Wescoat, "Common themes in the work of Gilbert White and John Dewey"; and MIT Environmental Research Council, *Implementing the MIT Global Environmental Initiative report of the ERC*.section 2.3.

http://orgchart.mit.edu/sites/default/files/reports/20120417_Provost_ERC_2012-04-Report.pdf.

Supplemental readings on the field (in the library stacks, not Stellar): Dreiseitl, 2009; Dunne and Leopold, 1978; Moore, 1950, 1994; Petruccioli, et al., 1985; Tarlock et al., 2009. See also "The Language of Water in El₂" on Stellar.

2. February 12 – *Mapping the Levels and Scales of Water Inquiry*. Scale is one of the most interesting, challenging, and contested topics in contemporary water research. Scaling is a key analytical method in hydrologic and aquatic ecosystems research. The term "scale" is also used in water management, but it is usually more correct to regard different water institutions as "levels" of inquiry. There is a rich literature on the "politics of scale" in human geographic research on water and related topics. Understanding the relationships among levels and scales is a major challenge in water planning, policy and design. This week's discussion will address diverse readings on scale and scaling.

Common readings: Kelbaugh, 2006; Islam and Susskind, 2013, pp. 46-51 and 71-79; Neumann, 2009; Norman, Bakker, and Cook, 2012; Sayre, 2005; Steinitz, 2005; and Wescoat and Entekhabi, 2009. How might these approaches help you better understand the articles in Petruccioli, et al., 1985, as well as your own work?

Supplemental readings: See the larger list of “Readings on Scale” Word document on Stellar.

Common task: prepare a bibliographic search strategy for your research project, to be completed by February 26th.

3. February 19 – President’s Day holiday: No Class. Readings on Water in Bodies, Buildings, and Site(No class, as Monday classes are held this Tuesday). Water constitutes the bulk of the human body, but it is not yet widely established as to whether or not there is a human right to water.¹ Conversely, buildings strive to shed water; although they do have embodied water, humidity, and plumbing. Landscapes constitute the largest *consumptive* use of water at all scales.²

Common tasks: Reflect upon the scales of use in individual bodies, buildings, and sites. Complete your initial bibliographic search and post the results on Stellar for discussion on Feb 26th. Your search of on-line libraries should include: Books = WorldCat; Journals = Web of Science, Avery, EiCompendex, and/or LexisNexis law reviews; Proquest dissertations; and Water Resources Abstracts.

Supplemental readings: Scan the “List of Technical Sources on Water in Architecture and Landscape Architecture,” and “List of Readings on Water as a Human Right” on Stellar.

4. February 26 – Local Water Communities, Cultures& Contexts. Identify the water communities in your project and their geographic contexts. We will discuss their formation, identities, dynamics, and significance in your projects.

Common readings: Bakker, 2008; Geertz, 1972; Mustafa, 2013, “Local hydro-hazardscapes in the rural canal colonies of Pakistan,” ch 4; Orlove and Caton, “Water Sustainability: Anthropological Approaches and Prospects,” *Annual Review of Anthropology*, Vol. 39: 401-415; and Spirn, 2000, “Reclaiming common ground ,” in *The American Planning Tradition: Culture and Policy*, ed. Robert Fishman, Washington, DC: Wilson Center, Smithsonian Institution, 2000, pp. 297-314.

Supplemental readings: See the IRC literature reviews on scaling-up community water supplies by Lockwood, 2004 and Ryan, 2004; Hassan, 2010, *Participatory Development: The story of the Orangi Pilot Project...*, pp. 33-38 and 57-81; and Mosse, 2006, *The Rule of Water: Statecraft, Ecology and Collective Action*. Also Wescoat, 2010, “Watering the Desert,” in *Making of the American Landscape*, 2nd ed. , pp. 207-228.

5. March 5 – Metropolitan Water Design. Urban water issues are increasingly drawn into interaction with suburban, exurban, and rural water systems. They are also the main focus of privatization and commodification. How might urban water systems be redesigned in fundamentally innovative ways?

¹ There is longstanding recognition of human rights to water in Islamic law, more recent recognition in international human rights law, and very recent recognition in the State of California.

² Consumptive use is the proportion of a water *withdrawal* that it is evapotranspired, and therefore does not return to the local water system for possible reuse.

Common reading: Novotny, V.; Ahern, J.; and Brown, P. 2010. *Water-centric Sustainable Communities: Planning, Retrofitting and Building the Next Urban Environment*. New York: Wiley, ch 1 and 2; McIlwaine and Redwood, 2010, *Greywater Use in the Middle East*, introduction; Wescoat, J.L. 2009. "Submerged landscapes: the public trust in urban environmental design, from Chicago to Karachi and back again," *Vermont Journal of Environmental Law* 10:435-475 <http://www.vjel.org/journal/pdf/VJEL10100.pdf>.

Supplemental reading: Gandy, 2003, *Concrete and Clay: Reworking Nature in New York City*; Kaika, 2004, *City of Flows: Modernity, Nature and the City*; National Research Council, *Urban Stormwater Management in the United States*; Mathur and da Cunha, 2009, *SOAK! Mumbai in an Estuary*; Rinne, 2011, *The Waters of Rome: Aqueducts, Fountains, and the Birth of the Baroque City*; Sinha and Ruggles, 2004, "The Yamuna Riverfront, India: A Comparative Study of Islamic And Hindu Traditions in Cultural Landscapes," *Landscape Journal*; and Swyngedouw, 2004, *Social Power and the Urbanization of Water: Flows of Power*.

6. March 12 –Water as Property Rights. This session will begin with philosophical arguments for and against private ownership of water (i.e., water rights as a form of property). We will then proceed to riparian water rights based on contiguity with a water body, which is historically the primary type of ownership in the humid eastern U.S.

Common reading: Tarlock et al., *Water Resource Management*, pp. 112-154; Campanella, *Delta Urbanism*, pp. 35, 45-48.

Supplemental reading: Becker, 1981. *Property Rights: Philosophical Foundations*; Tarlock et al., 2009, "Inventing rules to allocate a scarce resource," pp. 58-111.

7. March 19 – Water Rights in Time and Space. This session shifts from place-based rights to ownership of water based on time, such as the prior appropriation doctrine that prevails in the western U.S. and other systems of allocation based on turns. Identify the "quasi-private" realms of water in your project, e.g., property rights, water-related companies, and utilities.

Common reading: Tarlock et al., *Water Resource Management*, "Prior Appropriation," pp. 154-265.

Supplemental reading: Bakker, *Privatizing Water*, ch 1; Bruns and Meinzen-Dick, *Negotiating Water Rights*, chs. 1, 6, and 14; Wilkinson, J.C., 1977, *Water and Tribal Settlement in Southeast Arabia: a Study of the Aflaj of Oman*, Oxford, Clarendon Press. See "List of Publications on Water Privatization" on Stellar.

8. March 26 – SPRING BREAK

9. April 2 – State and Interstate Water. In federal systems of governance, primary authority over water resources rests at the state level (e.g., Massachusetts, Maharashtra, etc.). But there are limits: a state may not obstruct the transfer of water over its boundaries; and interstate disputes must be settled by congressionally ratified compacts or by the Supreme Court.

Common reading: Tarlock et al., "Modern statutory administration of water," pp. 266-298; and "Interstate allocation," pp. 938-1029.

Supplemental reading: Gerlak, 2005, "Federalism and U.S. Water Policy: Lessons for the Twenty-First Century," *Publius*, 36, 2:231-257; Harvard Water Federalism websites:

<http://watersecurityinitiative.seas.harvard.edu/conference-papers-and-presentations>; Iyer, 1994, "Indian federalism and water resources," *International Journal of Water Resources Development*, 10:2, 191-202; Mohan, et al., 2010. *River Water Sharing: Transboundary Conflict and Cooperation in India*. Also see Transboundary Freshwater Dispute Database for interstate compacts in your study region, www.transboundarywaters.orst.edu/.

10. April 9 – Integrated Regional River Basin and Aquifer Planning. Select one regional water program relevant for your project. Regions are integrative in spatial, functional, and/or cultural ways.³ Which of their water programs, publications, or datasets have relevance for your project?

Common reading: Wescoat and Halvorson, "Emerging Regional Perspectives on Water Research and Management: An Introductory Comment," *Eurasian Geography and Economics*, 2012, 53, No. 1, pp. 1–8; Wescoat, "'Watersheds' in Regional Planning," in *The American Planning Tradition: Culture and Policy*. Ed. Robert Fishman. Washington, DC: Wilson Center, Smithsonian Institution, 2000, pp. 147-72; and watershed or river basin articles in your region.

Supplemental reading: Lenton and Mueller, 2009, *Integrated Water Resources Management in Practice*, Earthscan, ch 1; and Wescoat, "The Indus River Basin as a Garden," *Gartenkunst*, 2012.

11. April 16 – No Class–Patriots Day. Reading about National Water Programs, Plans & Policy Reform. Select a national water agency in the U.S. or other country relevant to your project. Identify their water programs, policies, publications, weblinks and major on-line data links relevant for your project. In what ways can those programs address or influence issues of "design"?

Supplemental readings: Caponera, 1973, *Water Laws in Muslim Countries*, 2nd ed., FAO; Government of India, Ministry of Water Resources, "Draft National Water Policy (2012): http://mowr.gov.in/writereaddata/linkimages/DraftNWP2012_English9353289094.pdf;" Gleick, 2012, *The World's Water*, ch. 7, "U.S. Water Policy Reform" (and book length elaboration by Christian-Smith et al., 2012, *A Twenty-First Century U.S. Water Policy*); Leshy, "Notes on a progressive national water policy," *Harvard Law and Policy Review* (Winter 2009), <http://www.kysq.org/docs/Leshy09.pdf>; Warren Manning's "National Plan," <http://www.scribd.com/doc/13147826/Warren-Mannings-National-Plan>

12. April 23 – International Water Programs and Agreements. Select one U.N. water agency and one International NGO relevant to your field relevant for your work. Prepare a brief outline of their water programs and major publications. Consider the "design" of international programs and cooperative agreements.

Common task: Upload your revised project draft and references.

Common readings: McCaffrey, *The Law of International Watercourses*, "The concept of the international watercourse system," and "Theoretical bases of international watercourse law," chs. 2 and 3; Tal and Abed Rabbo, 2010, *Water Wisdom*, introduction and part 1; Islam and Susskind, 2012, *Water Diplomacy*, "The Indopotamia role play simulation," ch 7; and Zeitoun, 2011, *Power and Water in the Middle East: The Hidden Politics of the Palestinian-Israeli Water Conflict*, chs. 1 and 2; and Wescoat, 2009, "Comparative international water research," *Journal of Contemporary Water Research & Education*, 142, 1, pp 61–66.

³ We will discuss the theoretical literature on types of regions and varieties of regionalization and regionalism in this session.

Supplemental reading: Visit the Transboundary Freshwater Dispute Database at: <http://www.transboundarywaters.orst.edu/database/> for treaties relevant to your region; and the UNESCO Centre for Water Law, Policy and Science at the University of Dundee, www.dundee.ac.uk/water/. For historical perspectives, see Wescoat, "Main currents in multilateral water agreements," *Colorado Journal of International Water Law and Policy*; and idem., 2000, "Witffogel East and West: Changing Perspectives on Water Development in South Asia and the United States, 1670–2000," in *Cultural Encounters with the Environment*, ed., Alexander B. Murphy & Douglas L. Johnson, Rowman & Littlefield, pp. 109 ff.

13. April 30 – Global Water Inquiry. In what sense does your project have "global" dimensions? When thinking about this question, you may consider issues of global environmental change, globalization, and/or arguments about universality. How is "design" relevant in the context of these global processes?

Common readings: Allan, 2011, *Virtual Water*, ch 1; Conca, *Governing Water: Contentious Transnational Politics and Global Institution Building*, 2005, ch. 1. "Managing the Global Environment or Protecting the Planet's Places? Institutional Forms of Global Environmental Governance;" Gleick, *The World's Water, Vol 7, 2011-2012*, ch. 1, "Climate Change and Transboundary Waters;" and World Economic Forum, *Water Security*, ch 7 "Business"
http://www3.weforum.org/docs/WEF_WI_WaterSecurity_WaterFoodEnergyClimateNexus_2011.pdf.

14. May 7 – Transcendental Water Inquiry? Some scholars question the ability of political economic and institutional, as well as technocratic, approaches toward transforming water conflict into cooperation. They appeal to ethical and spiritual guides for water-environment-society relations.

Common reading: Faruqi, et al., *Water Management in Islam*, ch. 1; Schimmel, 1985, "The Water of Life," *Environmental Design*, pp. 6-9; Tuan, *The Hydrologic Cycle and the Wisdom of God*, ch 1; and Wolf, 2012, "Spiritual understandings of conflict and transformation and their contribution to water dialogue," *Water Policy* 14: 73-88.

Supplemental reading: Blair and Bloom, 2009, *Rivers of Paradise: Water in Islamic Art and Culture*, introduction; Eliade, *Patterns in Comparative Religion*, "The Waters and Water Symbolism," pp. 188-215; Wescoat, "Water in the Landscapes of Abraham," and idem., "Searching for Wisdom in Mughal-Rajput Waterworks: East-West Interdependencies," *East-West Landscape Interdependencies*. Eds. Joachim Wolschke-Bulmahn and Joachim Ganzert, University of Hanover, 2009, pp. 187-213.

15. May 14 – Final Gathering. Integration across Levels, Scales, and Modes of Experience. Present a brief summary of your project ideas and images in class. How has your understanding of the problem and project evolved? Can you identify key gaps and linkages across geographic regions, scales, spaces, or issues?

Common reading: Merrey, D.J. and Cook, S. 2012. "Fostering institutional creativity at multiple levels: Towards facilitated institutional bricolage." *Water Alternatives* 5(1): 1-19. http://www.water-alternatives.org/index.php?option=com_docman&task=doc_download&gid=154.

Supplemental reading: Cooper, *Synthesizing Research: A Guide for Literature Reviews*, 1996, chapter 1.

Complete your reading project and post on Stellar for discussion in class no later than noon on May 21st.

Common Readings

- Allan, J. A. 2011. *Virtual Water: tackling the threat to our planet's most precious resource*. London ; New York : I. B. Tauris.
- Bakker, K. 2008. The ambiguity of Community: Debating alternatives to private-sector provision of urban water supply. *Water Alternatives* 1 (2): 236-252. http://www.water-alternatives.org/index.php?option=com_docman&task=doc_download&gid=30
- Campanella, Richard. 2010. *Delta Urbanism: New Orleans*. Chicago: American Planning Association; Planners Press.
- Caponera ed. 1973. *Water Laws in Muslim Countries*, 2nd ed. Rome: Food and Agriculture Organization of the United Nations.
- Christian-Smith, Juliet et al. 2012. *A Twenty-First Century U.S. Water Policy*. Oxford: OUP
- Conca, Ken. 2005. *Governing Water: Contentious Transnational Politics and Global Institution Building*. Cambridge, Mass.: MIT Press.
- Faruqi, Naser I. et al. 2001. *Water Management in Islam*. Tokyo; New York: United Nations University Press.
- Geertz, Clifford. 1972. "The wet and the dry: traditional irrigation in Bali and Morocco," *Human Ecology* 1,1: 23-39.
- Gerlak, 2005, Federalism and U.S. Water Policy: Lessons for the Twenty-First Century," *Publius*, 36, 2:231-257.
- Hassan, Arif. 2010. *Participatory Development: The Story of the Orangi Pilot Project*. Karachi: OUP.
- Islam, Shafiqul and Lawrence E. Susskind. 2013. *Water diplomacy: a negotiated approach to managing complex water networks*. New York: RFF Press.
- Iyer Ramaswamy R. 1994. "Indian federalism and water resources." *International Journal of Water Resources Development*, 10:2, 191-202.
- Kelbaugh, D. 2006. "Urbanism and/or Architecture: Toward a Theory of Norm and Scale." *Places*. 18, 3: 42-48.
- Linton, Jamie. 2008. "Is the hydrologic cycle sustainable? A historical-geographical critique of a modern concept." *Annals of the Association of American Geographers* 98, 3: 630-649.

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- Moss, T. and Newig, J. 2010. "Multilevel water governance and problems of scale: setting the stage for a broader debate." *Environmental Management* 46: 1-6.
- Mustafa, D. 2013. *Water Resource Management in a Vulnerable World: Hydro-Hazardscapes*. London: I.B. Tauris.
- Neumann, Roderick P. 2009. "Political ecology: theorizing scale." *Progress in Human Geography* 33, 3: 398-406.
- Norman, E.S.; Bakker, K.; and Cook, C. 2012. "Introduction to the themed section: water governance and the politics of scale." *Water Alternatives* 5,1: 52-61. [see full issue at: http://www.water-alternatives.org/index.php?option=com_content&task=view&id=188&Itemid=1].
- Novotny, V.; Ahern, J.; and Brown, P. 2010. *Water-centric Sustainable Communities: Planning, Retrofitting and Building the Next Urban Environment*. New York: Wiley, ch 1 and 2.
- Orlove and Caton, "Water Sustainability: Anthropological Approaches and Prospects," *Annual Review of Anthropology*, Vol. 39: 401-415.
- Petruccioli, Attilio, ed. 1985. *Water and Architecture*. Special issue of *Environmental Design: Journal of the Environmental Design Research Centre*. Online access at: http://archnet.org/library/documents/one-document.jsp?document_id=6312
- Sayre, N. 2005. "Ecological and geographical scale: parallels and potential for integration." *Progress in Human Geography* 29: 3, 276-290.
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- Steinitz, C. 2005. "From Project to Global: on Landscape Planning and Scale", *Landscape Review*, volume 9 (2), 117-127. <http://journals.lincoln.ac.nz/index.php/lr/article/download/205/123>.
- Tal, Alon and Alfred Abed Rabbo ed. 2010, *Water Wisdom: preparing the groundwork for cooperative and sustainable water management in the Middle East*. New Brunswick, N.J.: Rutgers University Press.

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- _____. 2009, "Comparative international water research," *Journal of Contemporary Water Research & Education*, 142, 1, pp 61–66.
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<http://www.vjel.org/journal/pdf/VJEL10100.pdf>.
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http://www3.weforum.org/docs/WEF_WI_WaterSecurity_WaterFoodEnergyClimateNexus_2011.pdf
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Supplemental Readings

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- The Transboundary Freshwater Dispute Database. <http://www.transboundarywaters.orst.edu/>.
- UNESCO Centre for Water Law, Policy and Science at the University of Dundee, www.dundee.ac.uk/water/
- Van Koppen, B. et al., 2007. [Community-based Water Law and Water Resource Management Reform in Developing Countries: Rationale, Contents and Key Messages](http://www.iwmi.cgiar.org/Publications/CABI_Publications/CA_CABI_Series/Community_Law/protected/Ch%2001.pdf). CABI. http://www.iwmi.cgiar.org/Publications/CABI_Publications/CA_CABI_Series/Community_Law/protected/Ch%2001.pdf. Full book at:

http://www.iwmi.cgiar.org/Publications/CABI_Publications/CA_CABI_Series/Community_Law/protected/index.htm

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