COLUMBIA GSAPP
Graduate School of Architecture,
Planning and Preservation

Course	Indigenous Eco-Tech and Bio-Cultural Conservation	Term	Spring 2014
Code	A6310	Prof	Julia N Watson
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Description

In the past, the vernacular of traditional peoples has inspired innovation in the field of architecture, however the equivalent for the landscape remains unexplored. While ecological principles mainstream design discourse and terms like resilience supersede sustainability, our understanding of the consequences of these theories and the practices they inspire, remains unknown. For designers, terms such as diversity, reciprocity, feedback and resilience have ambiguous spatial and ecological consequences. However, they can be informed by the breadth and depth of knowledge observed in the societies of our 'ecological dwellers', as resilience is innate in their indigenous understanding of the environment.

This seminar explores the global shadow conservation network composed of indigenous landscapes and their living systems, in search of vernacular ecological innovation and models of preservation. Through subtle ecosystem modification and ecological mimicry, indigenous and traditional peoples have become the critical inhabitants of ecosystems that conservationists are so anxious to protect. A synthesis of recent evolutions in the fields of ecology, environmental systems, biodiversity conservation and sustainability will be accompanied by explorations of both classified contemporary material technologies and unclassified vernacular living systems. In this broader context, we will conduct investigations into new materialities and preservation models, through a global exploration of existing indigenous engagements with the landscape.

Objectives

The seminar offers a forum to explore, discuss and document innovative landscape operations. These innovations come from an emerging field of conservation biology, and a sub-field of human ecology known as sacred ecology. The seminar will generate a unique set of case studies and uncover architecturally undocumented technologies and preservation models. These landscape operations could be adapted to diversify architectural, landscape architectural, urban planning and preservation praxis, leading towards more resilient and inherently sustainable environments. With a global agenda, this research increases both cultural and biological diversity to sustain human wellbeing and the co-existence of man within his environs.

Readings will introduce theories relevant to contemporary conversations on ecology, conservation and the environment. This is a trans-disciplinary research seminar in which students will explore indigenous preservation and technological innovation by studying living cultural heritage and unraveling the complexity of the resulting ecologies and their innovations as coupled human and nature systems (CHANS).

CALENDAR

Session #	Date / Time	Title
Session 1	Jan 27, 2014 9:00-11:00am	Outlining Indigenous Eco-Technology and Bio-Cultural Conservation
Session 2	Feb 03, 2014 9:00-11:00am	Introducing Critical Concepts **Student Presentation of Research Topics**
Session 3	Feb 10, 2014 9:00-11:00am	Evolution of Eco-Technology **Student Presentation of Research Topics**
Session 4	Feb 17, 2014 9:00-11:00am	Evolution of Conservation
Session 5	Feb 24, 2014 9:00-11:00am	**Student Presentations & Submission of Phase 1:** **Documenting Indigenous Infrastructure / Preservation Model**
Session 6	Mar 03, 2014 9:00-11:00am	Global Biome Study 1: Deserts
Session 7	Mar 10, 2014 9:00-11:00am	Global Biome Study 2: Forests
SPRING BREAK		
Session 8	Mar 24, 2014 9:00-11:00am	Global Biome Study 3: Grasslands and Wetlands
Session 9	Mar 31, 2014 9:00-11:00am	Global Biome Study 4: Lakes, Rivers and Oceans
Session 10	Apr 07, 2014 9:00-11:00am	Guest Lecture / In Class Working Session
Session 11	Apr 13, 2014 9:00-11:00am	UNESCO World Heritage in Europe: Guest Lecture
Session 12	Apr 21, 2014 9:00-11:00am	**Student Presentations & Submission of Phase 2:** **Landscape Morphology, Species Symbiosis, Adaptive Management and Potential Reapplication**
FINAL REVIEWS		
Paper	May 05 – 09, 2014	Final Essay and accompanying Research Inventory

* Course calendar subject to scheduling changes

SESSION OUTLINE

PHASE 1

Session 1 – Outlining Indigenous Eco-Technology and Bio-Cultural Conservation
[*Monday Jan 27, 2014 - 9:00-11:00am****]***

Topics

- Ecological Disturbance and Vulnerability
- Sacredness and Sustainability
- Course Structure and Assessment: Tribes + Infrastructures / Preservation Models

Movie: Tungijuq, http://www.isuma.tv/hi/en/tungijuq/tungijuq720p

Session 2 – Introducing Critical Concepts [*Monday Feb 03, 2014 - 9:00-11:00am****]***

Topics

- Indigenous Eco-Technology
- Bio-Cultural Conservation
- Socio-ecological Systems and Ecosystem Services
- Coupled Human and Nature Systems (CHANS)
- Complex Adaptive Systems
- Species Symbiosis
- Adaptive Management

Readings

Berkes, F., J. Colding, et al. (2000). "*Rediscovery of Traditional Ecological Knowledge as Adaptive Management*". in Ecological Applications 10: 1251-1262.

De Meulder, B., Shannon, K., Eds. (2013). *"Water Urbanisms as a Way of Life"* in Water Urbanisms East. Park Books, Switzerland.

Hollings, C.S. (2002). Panarchy: Understanding Transformations in Human and Natural Systems. Washington, Island Press.

Waltner-Toews, D., J. J. Kay, et al., Eds. (2008). *"Bridging Science and Values: The Challenge of Biodiversity Conservation"*. New York, Columbia Press.

Session 3 – Evolution of Eco-Technology [*Monday Feb 10, 2014 - 9:00-11:00am****]***

Topics

- History of Technologies
- Material Technologies
- Traditional Ecological Knowledge

Movie: Wade Davis, The Wayfinders: Why Ancient Wisdom Matters in the Modern World
http://www.daviswade.com/#mi=1&pt=0&pi=13&p=-1&a=-1&at=0

Readings

Berkes, F. (2012). Sacred Ecology. Chps 1-4. New York, Routledge.

Margolis, L. and A. Robinson (2007). Living Systems: Innovative Materials and Technologies for Landscape Architects. Basel, Birkhauser.

Rudofsky, B. (1964). *"Introduction"* in Architecture Without Architects: A Short Introduction to Non-pedigreed Architecture. New York, Doubleday.

Session 4 – Evolution of Conservation [*Monday Feb 17, 2014 - 9:00-11:00am****]***

Topics

- History of Conservation
- Globally Protected Areas
- Indigenous and Community Conservation Areas (ICCA)
- Shadow Conservation Network
- Scientific Conservation vs. Bio-cultural Conservation

Readings

Dowie, M. (2009). Conservation Refugees: The Hundred-Year Conflict between Global Conservation and Native Peoples. Cambridge, Massachusetts, The MIT Press.

Maffi, L. and E. Woodley (2010). Biocultural Diversity Conservation: A Global Sourcebook. London, Earthscan.

Waltner-Toews, D., J. J. Kay, et al., Eds. (2008). *"The Cultural Basis for an Ecosystem Approach" in The Ecosystem Approach"*. New York, Columbia Press.
Balmori, D. and J. Sanders (2011). Groundwork: Between Landscape and Architecture. New York, The Monacelli Press.

Session 5 – Student Presentations & Submissions of Phase 1: Research + Analytical Drawing
[*Monday Feb 24, 2014 - 9:00-11:00am****]***

PHASE 2 *(subject to scheduling changes)*

Session 6 – Global Biome Study 1: Deserts [*Monday Mar 10, 2014 - 9:00-11:00am****]***

Topics
- Water Harvesting – Zuni, Hopi
- Pastoralism - Ngisonyoka Turkana

Session 7 – Global Biome Study 2: Forests [*Monday Mar 24, 2014 - 9:00-11:00am****]***

Topics
- Forest Farming - Kayapo
- Shifting Cultivation - Chagga

Session 8 – Global Biome Study 3: Grasslands and Wetlands
[*Monday Mar 31, 2014 - 9:00-11:00am****]***

Topics
- Pyrotechnology – Anishnabee
- Terracing - Subak, Ifugao, Tambak

Session 9 – Global Biome Study 4: Lakes, Rivers and Oceans
[*Monday Apr 07, 2014 - 9:00-11:00am****]***

Topics
- Aquaculture – Tofinu, Lardil
- Bridging – War Khasis,
- Damming – Enanawe Name
- Islands - Uros

Session 10 – UNESCO World Heritage in Europe: Guest Lecture
[*Monday Mar 03, 2014 - 9:00-11:00am****]***

Session 11 – Guest Lecture / In Class Working Session [*Monday Apr 13, 2014 - 9:00-11:00am****]***

Readings
Frampton, K. Towards a Critical Regionalism
Berkes, F. (2012). Sacred Ecology. Chps 11-12. New York, Routledge.

Session 12 – Class Presentations [*Monday Apr 21, 2014 - 9:00-11:00am****]***

Exam and Paper Week - Final Submission [*May 05 – May 09, 2014****]***

TEXTS

Burkes, F. (2012). Sacred Ecology. Edition 3. Philadelphia, Taylor & Francis.
Dowie, M. (2009). Conservation Refugees: The Hundred-Year Conflict between Global Conservation and Native Peoples. Cambridge, Massachusetts, The MIT Press.
Maffi, L. and E. Woodley (2010). Biocultural Diversity Conservation: A Global Sourcebook. London, Earthscan.
Margolis, L. and A. Robinson (2007). Living Systems: Innovative Materials and Technologies for Landscape Architects. Basel, Birkhauser.
McHarg, I. (1969). Design With Nature. New York, Doubleday/Natural History Press.
Rudofsky, B. (1964). Architecture Without Architects: A Short Introduction to Non-pedigreed Architecture. New York, Doubleday.

ASSIGNMENTS

The course assignments will document indigenous innovations as landscape systems by employing conventional drawing techniques, system diagramming, and GIS mapping. Assigned with an innovation, a tribe and a territory, students will document the bio-physical metrics and intangible/tangible cultural heritage, using 3D modeling, scalar and landscape morphology studies, mapping, imagery and diagramming. The students will then be asked to propose a contemporary reapplication of the innovation, as a proposition for inquiry. The assignment requirements will vary based on the student's degree program.

The course assessment is divided into 2 phases, involving a mid-review and final review presentation with accompanying submissions and a final essay including all graphics and a research inventory.

1. Indigenous Innovation / Preservation Model Selection - Presentation
2. Document Indigenous Innovation / Preservation Model – Presentation + Submission
3. Landscape Morphology, Species Symbiosis, Adaptive Management and Potential Reapplication– Presentation + Submission
4. Final Essay and accompanying Research Inventory - Submission

Phase 1A – Documenting Indigenous Infrastructure [Architecture and Urban Planning]

For an indigenous infrastructure, compose a 3D model of the base module, accompanied by several assigned scale google earth images and anthropological images.
• Choose a tribe and territory - Research their innovations, composing a list of eco-tech innovations. Compile your findings in the research inventory spreadsheet provided and collect referenced images.
Presentation: 5 minute powerpoint max. 10 images (no submission): **Feb 03 or 10,2014**
• Choose an innovation - Develop a set of detailed and annotated construction drawings by observing and modeling the component parts of the system, assigning materials and measurements, to explain how the system works.
Presentation: 3 analytical drawings; 1. plan view, 2. a section and an elevation view, 3. an exploded axonometric.
Submission: 11 x 17" color copy: **Feb 24, 2014**

Phase 1B – Documenting Preservation Model [Urban Planning and Preservation]

For a preservation model, compose a mapping of the various biophysical, cultural and legal boundaries to explore their coincidence, accompanied by several assigned scale google earth images and anthropological images. Overlay with mapping that includes the Indigenous territory including assigned base layers and important ecoregions and naming significant geographical features.
• Choose a tribe and territory - Research their preservation models composing a list of attributes.
Presentation: 5 minute powerpoint max. 10 images (no submission): **Feb 03 or 10,2014**

• Describe using mapping and diagramming the preservation principles governing the site. Present a comparative analysis of the various biophysical, cultural and legal boundaries. Both a regional scale and an accompanying global inset map depicting the potential biome migration opportunities.
Presentation: Present your mappings using the template provided.
Submission: printed 24 x 36" color copy: **Feb 24, 2014**

Phase 2 – Landscape Morphology, Species Symbiosis, Adaptive Management and Potential Reapplication

Develop a series of diagrams explaining the landscape morphology, species symbiosis and adaptive management techniques of the tribe and their innovation.
• Develop a series of graphics further explaining the landscape morphology and scale of the systems, symbiosis with (animal) species and the adaptive management (man's influence over seasons) on the innovation.
• Conclude your research by responding to this statement as a summary of 'lessons learned'.
The ecosystem innovations of the world's indigenous people, offers insight into a crisis facing our world – an understanding of how to live in harmony with our environments. What is needed is an international platform to share knowledge and information on important systemic crisis touching our generation - how we as a global civilization can imagine adapting our present existence, to an age of shared co-existence. To do so we need to understand and preserve these living systems using living design processes that can adapt their knowledge to solve contemporary crisis. How and where could these systems be adapted?
Presentation: With accompanying work from Phase 1 as ppt as per format.
Submission: 11 x 17" color copy for submission: **April 21, 2014**

Final Submission - Final Essay and accompanying Research Inventory

The final submission will be a booklet in a pre-formatted template documenting the semester's assignments, accompanied by an 2000 word essay. The Research Inventory is additionally required.
Submission: Booklet and digital research inventory with references: **May 05-09, 2014**

OTHER RESOURCES

Books

Addington, M., Schodek, D., (2005) Smart Materials and Technologies: for the architecture and design professions, Amsterdam: Architectural Press, Oxford: Architectural Press.

Beardsley, J., (2013) Designing Wildlife Habitats, Washington: Harvard University.

Beylerian, G., Dent, A., (2007) Ultramaterials: How Materials innovation is changing the World, New York: Thames and Hudson.

Eliade, M., (1957) The Sacred and The Profane, New York: Harcourt.

Harris, C., Dines, N., (1974) Time Saver Standards for Landscape Architecture, McGraw Hill. **AA 9517 T481**

Brownell, B., (2006) Transmaterial: A Catalog of Materials that Redefine our Physical Environment, Princeton Architectural, New York: Princeton Architectural Press. **AA 3115 T68**

Brownell, B., (2008) Transmaterial: A Catalog of Materials that Redefine our Physical Environment, Princeton Architectural, New York: Princeton Architectural Press.

Brownell, B., (2010) Transmaterial: A Catalog of Materials that Redefine our Physical Environment, Princeton Architectural, New York: Princeton Architectural Press.

Kennedy, M., (2013) Introducing Geographic Information Systems with ArcGIS (3rd Ed) New Jersey: John Wiley and Sons.

Margolis, L., Robinson, A., (2007) Living Systems: Innovative Materials and Technologies for

Landscape Architecture, Basel: Birkhauser. **AA 9517 M33**
Materio (compiler), (2006) Material World 2: Innovative Materials for Architecture and Design, Birkhauser. **AK 1980 M43**
McDonough, W., Braungart, M., Cradle to Cradle: Rethinking the Way We Make Things, New York: North Point Press.
McHarg, I., (1969) Design With Nature, New York: Double Day Press.
McLeod, V., (2008) Detail in Contemporary Landscape Architecture, London: Laurence King Publishing. **AA 9517 M23**
Zimmerman, A., (ed), (2008) Constructing Landscape: Materials, Techniques, Structural Components, Basel: Birkhauser. **AA 9517 Z65**

Material Databases

- GreenSpec: UK's "green" materials database: http://www.greenspec.co.uk/
- GSD Materials Collection Blog: http://gsdmaterialscollection.blogspot.com/
- Materia: Dutch architectural materials database: http://www.materialexplorer.com/
- Material Connexion: http://www.materialconnexion.com/

Conservation Journals

- Current Conservation http://www.currentconservation.org/
- Conservation Agriculture http://www.fao.org/ag/ca/
- Ecology and Society Journal
- Nature and Culture Journal

Indigenous Knowledge Resource Centers

- Center for International Research and Advisory Networks (CIRAN): Drs. G. W. von Liebenstein, Director; Nuffic/CIRAN, P.O. Box 90734, 2509 LS The Hague, The Netherlands (telephone 31-70-3510577: FAX 31-70-3510513).
- Center for Indigenous Knowledge for Agriculture Development (CIRARD): Dr. D. Michael Warren, Director: Curtis Hall, Iowa State University, Ames, Iowa 50011 (telephone 515-294-0938: FAX 515-294-1708).
- Leiden Ethnosystems and Development Program (LEAD): Dr. L. Jan Slikkerveer. Director: LEAD. Institute of Cultural and Social Studies, University of Leiden, P.O. Box 9555, 2300 RB Leiden, The Netherlands (telephone 31-71-273469: FAX 31-71-273619).
- African Resource Centre for Indigenous Knowledge (ARCIK): Prof. Adedotun Phillips, Director, and Dr. Tunji Titilola, Research Coordinator; ARCIK, Nigerian Institute of Social and Economic Research (NISER), PMB 5 - UI Post Office, Ibadan, Nigeria (FAZ 022-416129 or 01-614397).
- Regional Program for the Promotion of Indigenous Knowledge in Asia (REPPIKA): Dr. Evelyn Mathias-Mundy, Coordinator: REPPIKA, International Institute of Rural Reconstruction (IIRR), Silang, Cavite, Philippines (telephone 0969-9451; FAX 632-522-24-94).
- Ghana Resource Centre for Indigenous Knowledge (GHARCIK): Mr. Charles Annor-Frempong, Director: GHARCIK, School of Agriculture, University of Cape Coast, Cape Coast, Ghana (Telex 2552 UCC GH).
- Indonesian Resource Center for Indigenous Knowledge (INRIK): Prof. Dr. Kusnaka Adimihardja, Director: INRIK, Dept. of Anthropology, University of Padjadjaran, Bandung 40132, Indonesia (FAX 022-431938).
- Mexican Research, Teaching and Service Network on Indigenous Knowledge (RIDSCA - Red de Investigacion, Docencia y Servicio en Conocimientos Autoctonos): Dr. Antonio Macias-

Lopez, Director; Colegio de Postgraduados, CEICADAR, Apartado Postal 1-12, C.P. 72130, Col. La Libertad, Puebla, Pue., Mexico. (Tel. 48-00-88, 48-09-78, 48-05-42).
- Philippines Resource Center for Indigenous Knowledge and Sustainable Development (PhiRCIKSD): Dr. Rogelio C. Serrano, National Coordinator; Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCAARD), Los Banos, Laguna, Philippines (FAX 63-094-50016; Telex 40860 PARRS PM).
- Kenya Resource Centre for Indigenous Knowledge (KENRIK): Dr. Mohamed Isahakia, Acting Director; National Museums of Kenya, P.O. Box 40658, Nairobi, Kenya (Tel. 254-2-742-161; FAX 254-2-741-424).
- Regional/Sub-Regional Centers: European Resource Center for Indigenous Knowledge, Trans-Andean Resource Center for Indigenous Knowledge.
- National Centers: Benin, Namibia, Zimbabwe, Burkina Faso, South Africa, Tanzania, Costa Rica, Venezuela, Colombia, Peru, Bolivia, Nepal, India, Australia.

Indigenous Organizations

- Survival International
- Cultural Survival
- Forest Peoples Worldwide
- Sacred Land Film Project
- http://www.sacredearth.com/ethnobotany/ik.php
- Future Generations
- Bioneers
- The Wilderness Society
- The Northern Rangelands Trust
- Center for Indigenous Knowledge for Agriculture and Rural Development @ Iowa State University
- International Funders for Indigenous Peoples (IFIP)

GRADING CRITERIA
Students are encouraged to improve exercises and will be considered if an upgrade to a previous poor performance is requested. Students may appeal grades in writing to the Instructor for review within 1 week after receiving the appealing grade.

ATTENDANCE POLICY
Absences will require prior approval or notification and poor attendance can contribute to a downgrade of the final grade. Lack of attendance and lateness can contribute to a downgrade of the final project submission grade, unless prior approval by the Instructor. Students are expected to arrive to class punctually and be engaged. Missed submission or presentation without prior notification will result in an immediate Fail.

ACADEMIC INTEGRITY
Student-teacher relationships are built on trust. For example, students must trust that teachers have made appropriate decisions about the structure and content of the courses they teach, and teachers must trust that the assignments that students turn in are their own. Acts that violate this trust undermine the educational process. In this class, all assignments that are turned in for a grade must represent the student's own work. In cases where help was received, or teamwork was allowed, a notation on the assignment should indicate your collaboration. Submission of any assignment that is in violation of this policy will result in a penalty of failure of the assignment.