An Introduction to My Path, Practice & Teaching

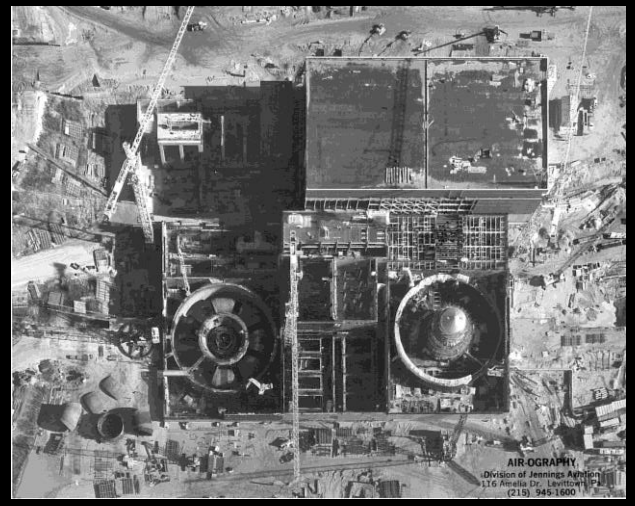
Michael C. Henry, PE, AIA
Adjunct Professor of Architecture

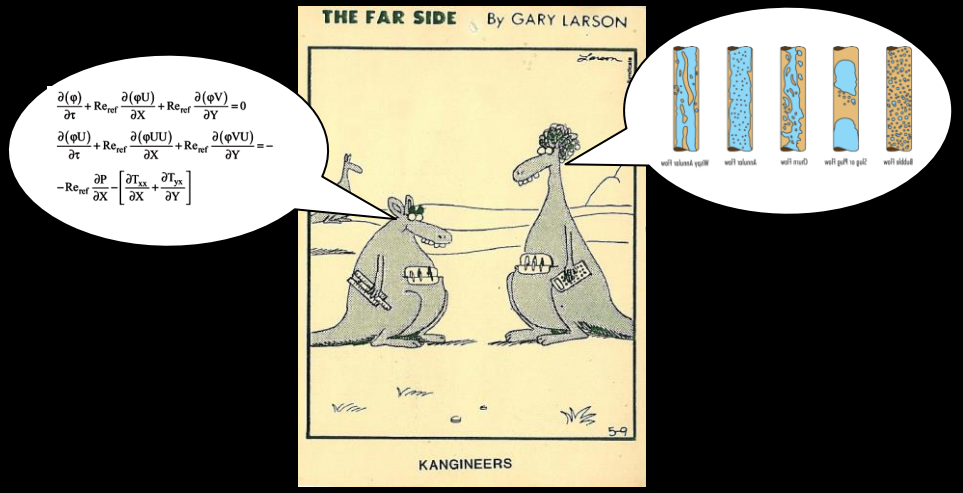
Principal Engineer/Architect,
Watson & Henry Associates, Greenwich, NJ

HSPV 551 Building Pathology (Spring)
and
HSPV 551 Building Diagnostics & Monitoring (Fall)

My path

1977 - I earned my MS in Engineering at UPenn while working as a Construction Engineer…
1984 - I started my practice, and was rapidly drawn to problems in historic buildings…
2005 - Frank Matero asked me to teach Building Pathology & Diagnostics at UPenn…





Building nuclear power plants ➔ Studying fluid dynamics at Penn ➔ Building Pathology

Practice – *Conservation Assessments & Planning*

Georgia O'Keeffe's Home & Studio
Abiquiu, NM
Conservation Assessment Plan
with Pamela W. Hawkes, FAIA,
for The Georgia O'Keeffe Museum

The Charles & Ray Eames House
Pacific Palisades, CA
environmental & systems risk assessment
for *Conservation Management Plan*
for The Getty Conservation Institute

Practice - *Sustainable environmental management for museum collections*

Government Museum & Art Gallery
Le Corbusier
Chandigarh, India
for The Getty Conservation Institute

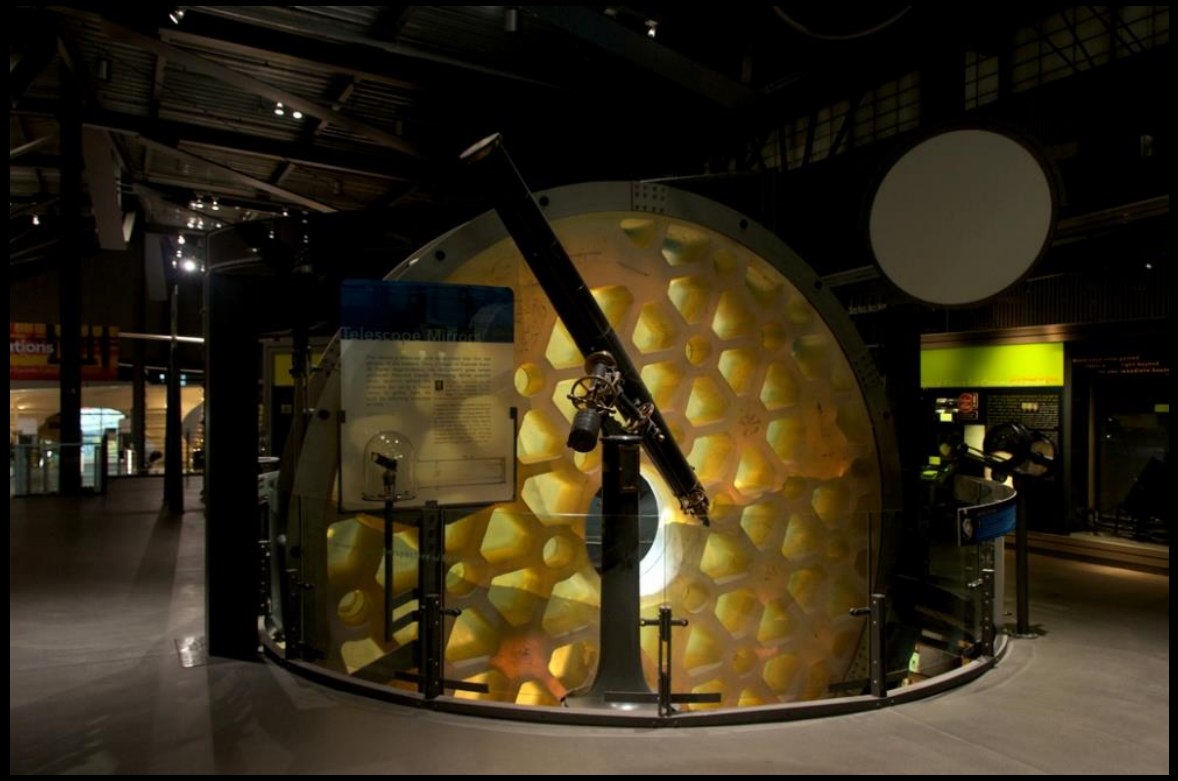
Ernest Hemingway's *Finca Vigia*
& new Conservation Workshop
San Francisco de Paulo, Cuba
for The Hemingway Foundation

Practice – *Building Diagnostics & Moisture Investigations*

Michigan State Capitol
Lansing, MI
Diagnostic monitoring of building performance
for EYP Architects & Engineers

The Alamo Church
San Antonio, TX
Moisture transport analysis for stone deterioration
with Dr. George Wheeler
for Preservation Design Partnership

Practice – *Engineering for Large Artifacts*



5 meter Mirror Blank for the Palomar Telescope
Corning, NY
relocation & remounting of 20 ton museum object
with ARUP Engineering
for The Corning Museum of Glass

15 meter high 16th C. Retablo
ex-convento de San Juan Bautista
Cuautinchan, MX
monitoring for environmental stabilization
for The World Monuments Fund

Teaching

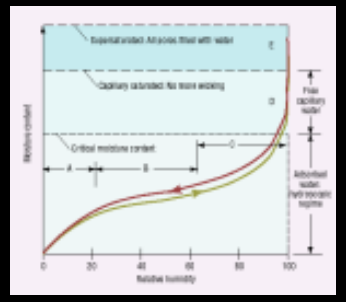
- Weitzman School of Design, Historic Preservation Program
  Lecturer, Adjunct Professor of Architecture, 2005 to present
- Winterthur/University of Delaware Graduate Program in Art Conservation
  Guest lecturer in Preventive Conservation Block, 1997 to present
- Getty Conservation Institute, Programs for Museum Professionals,
  Instructor 1995, 1996, 1998, 2000 , 2003, 2017, 2019
- ICCROM, Conservation of Built Heritage, Special Module on Sustainability
  Herculaneum, Italy: 2012.
- University College London, MS Program for Sustainable Cultural Heritage
  Visiting Teacher 2003, 2005, 2008, 2009, Fulbright Teaching Scholar 2006

HSPV 551 Building Pathology

Topics:

- *Material longevity: entropy, durability, service life, sustaining building longevity*
- *Material properties: asset performance, vulnerabilities, archaic & modern*
- *"Stuff" around the building: air, moisture, earth, climate & climate change*
- *Building physics: moisture & thermal energy movement in materials*
- *Deterioration: causality, necessary & sufficient causal factors*
- *Deterioration mechanisms: biological, electro-chemical, hygrothermal, mechanical*
- *Structural problems: loads, soils, foundations, superstructures*
- *Enclosures: roof and wall systems, windows, doors*
- *Systems: human comfort, HVAC, lighting, plumbing, fire detection/protection*
- *What to do next: approaches to prevention and intervention*

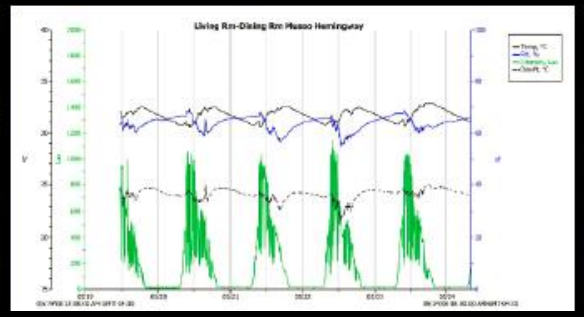


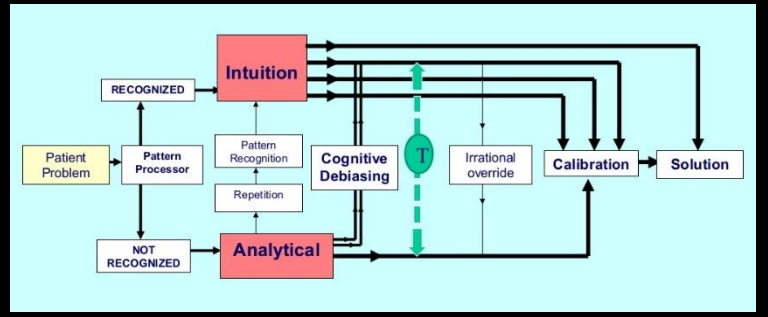



HSPV 552 Building Diagnostics and Monitoring

Topics:

- Metacognition: thinking about our thinking, diagnostic biases & traps
- Systems thinking: recognizing systems of flows, feedback & behavior
- Problem solving: defining a problem, divergent & convergent thinking & analysis
- Qualitative assessment: our vision system, how we see, what we miss & why
- Quantitative assessment: measurement basics, error, repeatability, rate of change
- Moisture & temperature measurement: methods and devices
- Building investigations: probes, samples, non-destructive examination, testing
- Visualizing Information: making sense of data & information in space & time
- Hypothesis development: evidence/noise, correlation/causality, validation

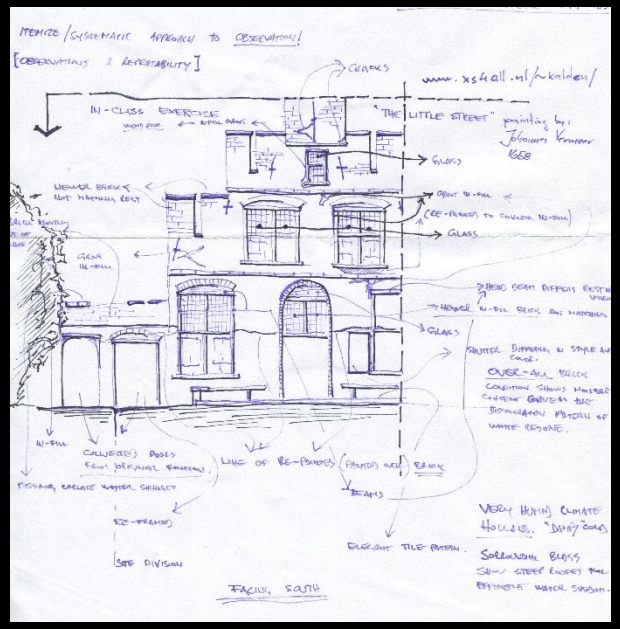


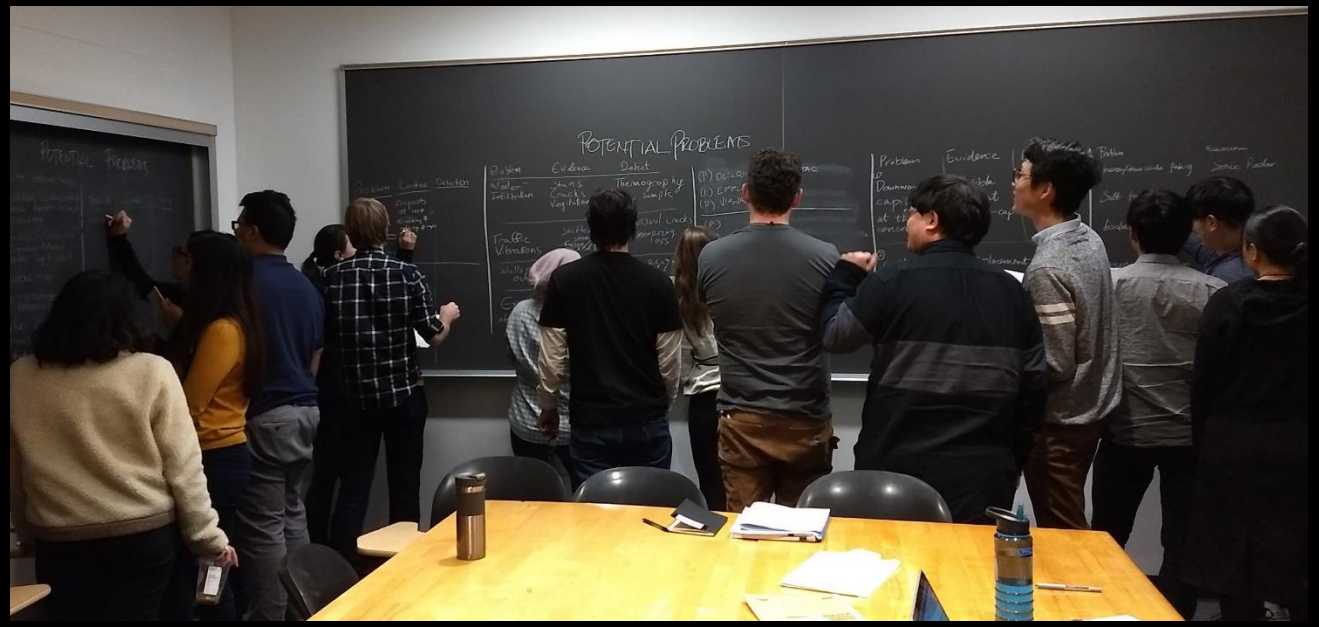


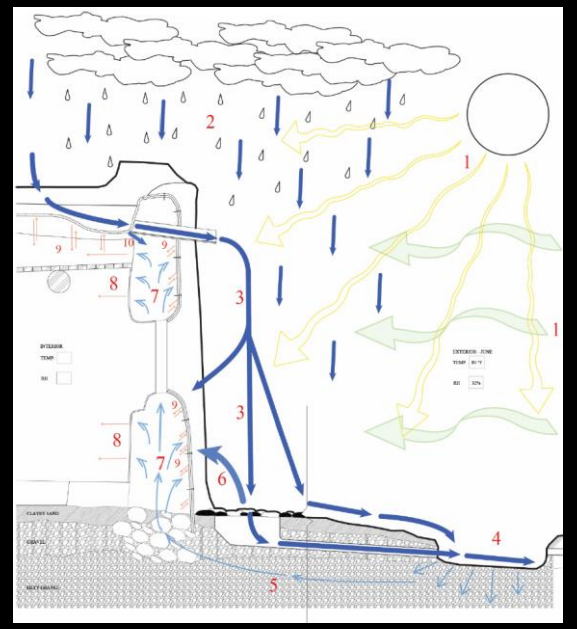
HSPV 551 & HSPV 552 - Teaching and Learning

Methods:

- Readings from professional journals & technical literature
- Lectures
- Case studies of diagnosing complex, synergistic building pathologies
- Critical thinking, systems thinking, problem-solving & analytic exercises
- Class exercises & final assignment executed by teams







Witnessing students "get it" and seeing graduates practice their profession are the greatest rewards in my career as engineer, architect and educator.

I look forward to seeing you in the September, in the meantime, if you have questions, please email me henrmic@design.upenn.edu *and we can set up a time to chat.*