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Envisioning Urban Nanotechnologies through the Futurescape City Tours

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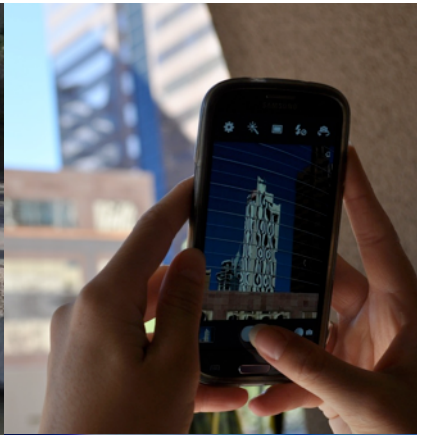
Futurescape City Tours

- Constellation of civic engagement and public deliberation activities
  - Urban walking tour
  - Reflections through photography
  - Varied interactions between citizens, stakeholders and experts
  - Image-based deliberative inquiry
- Explores emerging technologies, urban environments & invisible infrastructures (Wiek et al 2012)
- Focus on capacity building



FUTURESCAPE CITY TOURS

A NOVEL METHOD FOR CIVIC ENGAGEMENT

The Tours were developed by researchers at the Center for Nanotechnology in Society (CNS) at Arizona State University, and implemented in six cities in North America.

Phoenix, Arizona: **Cynthia Selin**, **Kathryn de Ridder-Vignone,** ASU
St. Paul, Minnesota: **Roopali Phadke**/ Macalester College
Portland, Oregon: **Thad Miller**, Portland State University
Amherst, Massachusetts: **Gretchen Gano, Krista Harper**, UMass Amherst
Washington, DC: **David Tomblin**, Virginia Tech**, Mahmud Farooque,** ASU
Edmonton, Canada: **Kevin Jones**, University of Alberta

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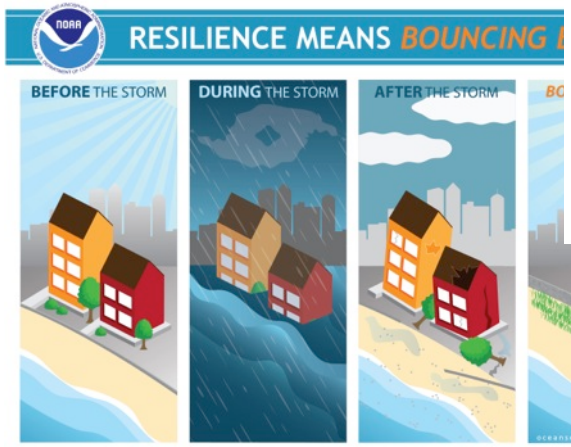

ECAST

Expert & Citizen Assessment of Science & Technology

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World Wide Views

National Citizens' Technology Forum

NISE network™

NANOSCALE INFORMAL SCIENCE EDUCATION

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Forms of Public Engagement

- Attendance at fairs /exhibitions to which members of the public are invited
- Seeking to influence public policy
- Students working with the public as part of their course (eg applying research skills in a community context)
- Providing 'lifelong learning' opportunities (eg short courses or study days)
- Volunteering on behalf of the university
- Advisory processes - providing advice to members of the public or external organisations
- Facilitating the use of university facilities by the public
- Working with teachers/schools

http://www.publicengagement.ac.uk/

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Forms of Public Engagement (cont.)

- Presenting to the public (eg public lectures or talks)
- Co-produced research, with the public helping to shape the research question, design and/or delivery
- Seeking public input into your research
- Writing for the non-specialist public
- Judging external competitions
- Media work aimed at a non-specialist audience (press, TV, radio, podcasts)
- Taking part in a public event/debate
- Working with museums / galleries / science centres and other cultural venues

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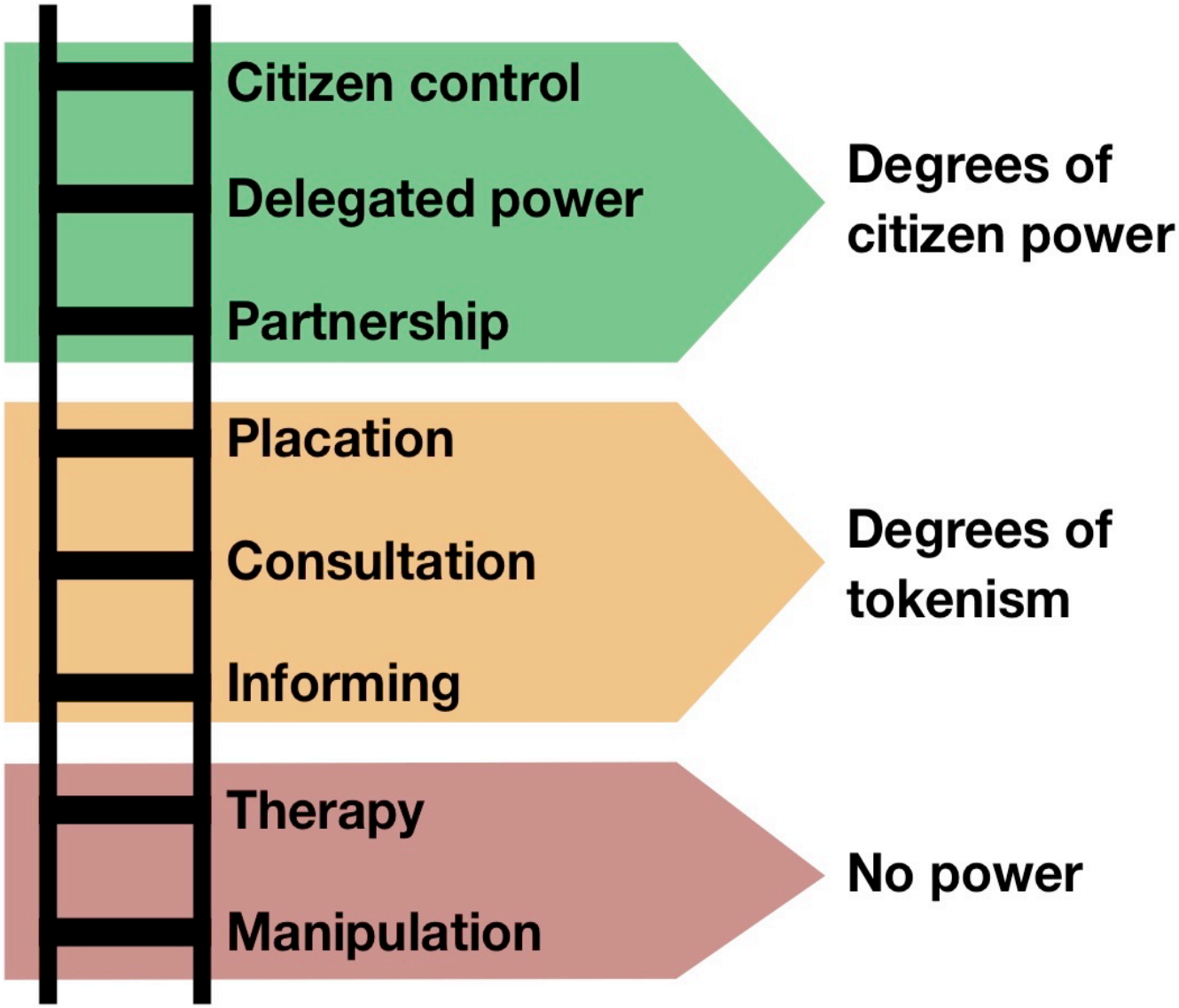
Arnstein (1969) Ladder of citizen participation



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Why Engage the Public? (Wilsdon & Willis 2004: 39)

- *a normative position* suggests that 'such processes should take place because they are **the right thing to do**: dialogue is an important ingredient of a healthy democracy'
- *an instrumental position* holds that 'engagement processes are carried out because they **serve particular interests**'. For example: 'Governments may want to engage in order to build trust in science and manage their reputation for competence'
- *a substantive perspective* suggests that the goal of public engagement 'is to **improve social outcomes** in a deeper sense […] From this point of view, citizens are seen as subjects, not objects, of the process. They work actively to shape decisions, rather than having their views canvassed by other actors to inform decisions that are then taken'.

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Public Deliberation

- Deliberation is "distinguished from other kinds of communication in that deliberators are amenable to changing their judgments, preferences, and views during the course of their interactions, which involve **persuasion rather than coercion, manipulation, or deception**" (Dryzek 2000: 1).
- Cohen (1989) suggests that there are four criteria for ideal deliberation:
  - It is *free* discourse: participants regard themselves as bound solely by the results and preconditions of the deliberation process.
  - It is *reasoned*: parties are required to state their reasons for proposals.
  - Participants in the deliberative process are *equal.*
  - Deliberation aims at rationally-motivated *consensus*.

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Critiques of Public Engagement

From broader political theory, a concern that **deliberation is too reliant on scientific modes of reasoning** such that by "valuing rationality, reserve, selflessness and powers of argumentation, deliberative democracy is a democratic politics played out on scientists' home turf" (Elam and Bertilsson 2002).

As in other fields (cf Sandercock 1998), there is **a need to re-imagine participatory practices** as **open to diverse modes of expression** and as embedded within specific social, cultural and geographical contexts.

Process: questions of fairness (Davies et al 2006), representation (Rowe et al 2004), bottom-up/top-down (Delgado et al 2010)

Efficacy: critiques around policy impact (Neresini and Bucchi 2010), influence on public trust (Wynne 2006)

Framing: constitution of public knowledge (Lezaun & Soneryd 2007), deficit model (Irwin 2001)

Contexts: entanglement with neoliberal economic frameworks (Goven 2006; Thorpe 2010)

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Beacon Study

"…in the events we analysed, lay positions appeared to be [so] deferential, and, even when strong, prone to disavowal in favour of other expert positions. … **[we] question the extent to which lay people can ever expose scientific error and hubris, given that the layness we found was so fragile, easily compromised and so readily aligned with expert positions by both scientific experts and others.**" (Kerr et al 2007, 408)

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These versions of deliberation have been subject to critique from a number of directions. In particular, the belief that **power-free environments are possible** and emphasis on the use of **'reasoned argument'** have come under attack. More radical responses to deliberation have argued for the need for other forms of interaction – storytelling, performance, song – within the deliberative process, or even for 'rowdy' non-participation as an expression of the rejection of unjust political systems (Elam and Bertilsson 2002; Young 2001).

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Design Principles for the Futurescape City Tours

- Enable citizen led agendas
- Focus on futures in a tempered fashion
- Frame a critical, reflexive approach to technology
- Deploy diverse modalities for deliberation
- Emphasize the embodied, affective nature of engagements with place/urban landscapes.

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Futurescape City Tour
4 Stages of Engagement

- 1) **Orientation Session**
  - Citizen-driven and emergent agenda
  - Energy, Transportation, and Water
- 2) **Tour**
  - Walking Tour
  - Integration between experts, civic leaders and citizens
  - Varieties of techniques/structures for participation (beyond deliberation)
  - Emphasis on past, present, and future
- 3) **Deliberative Session**
  - Image- based Deliberation
- **4) Public Exhibition**

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RECRUITMENT SURVEY QUESTIONS

A mix between Y/N, open-ended & multiple choice questions:

Age, gender	Profession
Ethnicity	Relation with nano in their profession
Religious affiliation	Main hobbies
Household income per year	Level of interests on S & T issues
Educational level	Familiarity with nano
Employment status	Civic involvement

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Orientation Session

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Session 1: Aims of Session for Participants

- Understand the purpose and logistics of Tours
- Build capacity for group discussions
- Develop, share and refresh ideas about the future of Phoenix
- Appreciate concepts like anticipatory governance and path dependency
- Articulate and challenge assumptions about technological change in relation to the urban environment

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Curiosities & Concerns

- What excites or concerns you about the future of Phoenix?
- What do you value most about Phoenix that you would like to see preserved?
- What would you like to see transformed?

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WHAT IS TECHNOLOGY?

Three ways to think about technologies

- Values shape how technologies are developed and adopted.
  - How do our values shape the development, adoption, and use of ***asphalt?***
- Technologies affect social relationships.
  - How do ***cell phones*** affect our social relationships?
- Technologies are part of larger systems.
  - How does the ***tomato*** reveal how technologies are part of larger systems?

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Nano Equity Game

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Citizen-set Agendas

- Transportation, esp Public
- Renewable Energy, esp Solar
- Cultural Institutions
- Community
- Diverse Ecosystems
- Urban Heat Island
- The Public Square
- Sprawl
- Historic Preservation

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Walking Tour

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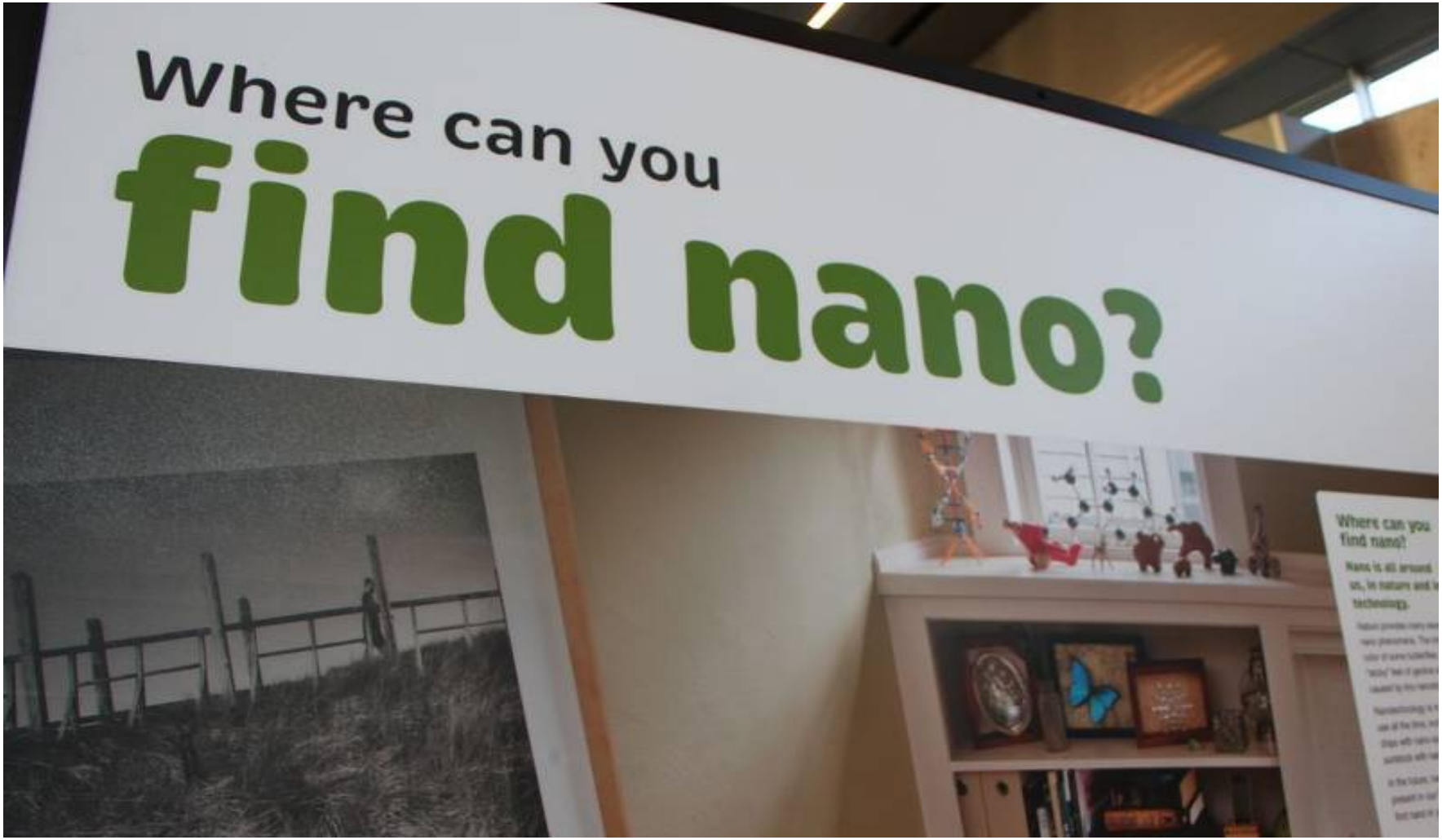
The Tour Begins…



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Solar- Biosciences High School

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Water – Interaction and Learning Between Experts, Stakeholders & Citizens

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Walking Tour & Use of Photography

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Different Cities, Different Controversies

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Citizen Debrief from Tour
(Phoenix Pilot 2012)

- "I was surprised about what I didn't know about the things I see everyday."
- "To be able to see the interconnectivity of all the systems- to connect them visually and physically."
- "I was a tourist in my own city, I was born here, lived here, and yet I haven't seen a lot of these things."
- "I'm optimistic for us as citizens to solve problems but I'm pessimistic about government's ability to solve them."
- "We all have different perspectives- we need to come together to talk."

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Curating Tour Photos

climate/resource disruptions necessitating ubiquitous emergency response

Nano-materials in the construction sector freeing imagination

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Deliberative Session

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Deliberative Session: Guiding Questions

- What role does technology play in reaching that desired future?
- What have you learned about the development of nanotechnology?
- What do you want from emerging technologies?

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Resonances with the Past

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The Present- positives and negatives

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Articulating Desirable Futures

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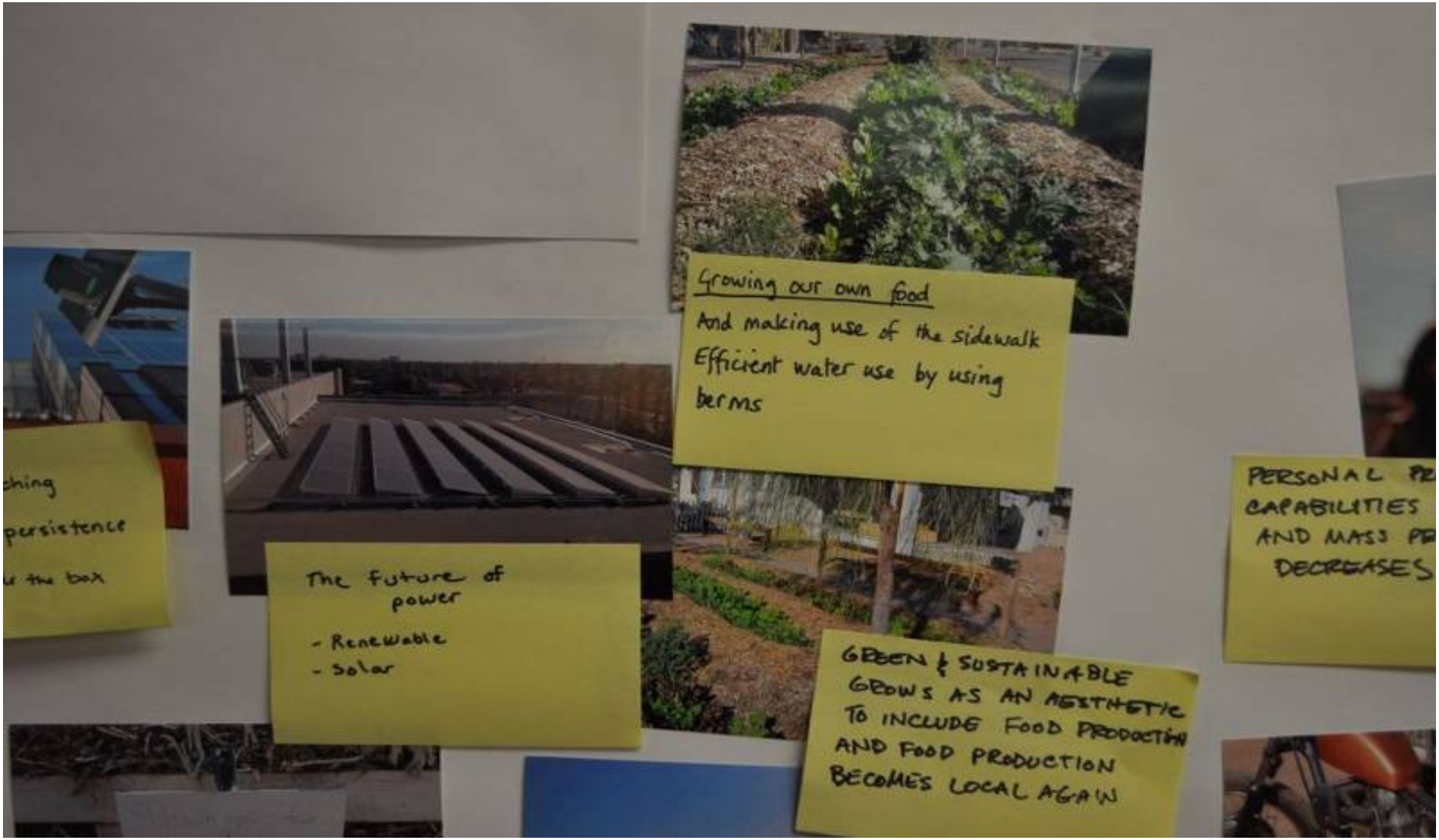

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Public Exhibitions

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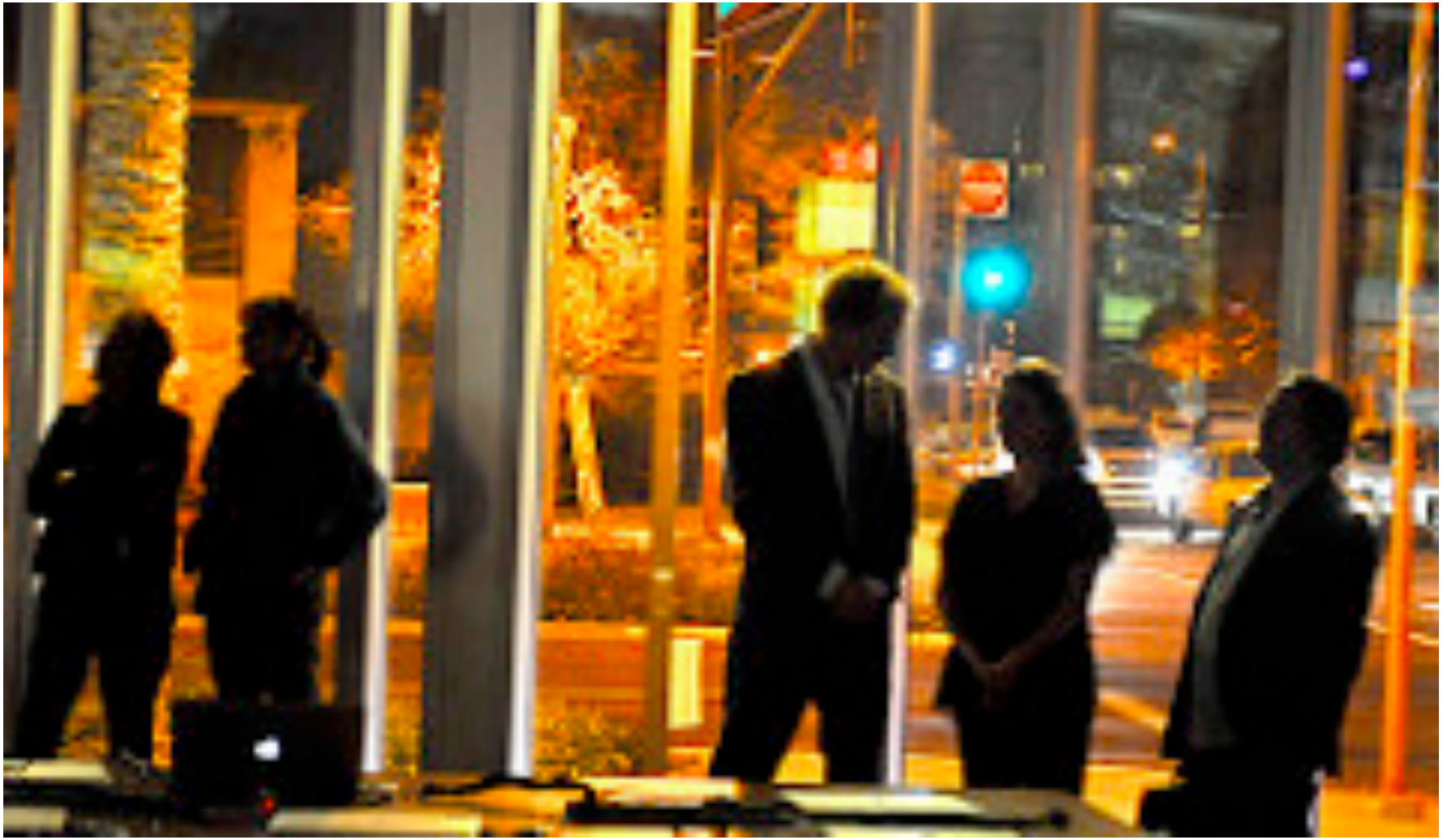

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Reflections

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FCT/ Capacity Building

- The development and practice of civic capacities are desirable ends of public engagement, which should vie for prominence alongside of the traditional, though nevertheless elusive, outcomes of policy impact or integration in decision-making.
- These capacities are important enablers for laypeople to contribute productively—in a distributed and diverse fashion—to the **democratization of science and technology**.
- Selin et al's "**Experiments in Engagement: Designing PEST for Capacity Building**" (*Public Understanding of Science*
- Gano, Gretchen. 2014. "**The Soft Megamachine: Lewis Mumford's Vision of Technological Society and Implications for (Participatory) Technology Assessment**." Arizona State University.

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FCT/ Temporality

- In "**Against Blank Slate Futuring: Noticing Obduracy in the City through Experiential Methods of Public Engagement**", Selin and Sadowski argue that obduracy is an important, yet often neglected, aspect of technology assessment that must be taken into account when questioning alternative future assemblages of science and technology.
- The FCTs foreground the ways the future is already conditioned by contemporary and historic social, material, and economic circumstances.
- (Kearnes, M. & J. Chilvers (eds). *Remaking Participation: Science, Environment and Emerging Publics.* Routledge).

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FCT/ Reflexivity

- In "**Seeing Differently: Enticing Reflexivity through Mediated Participation in Place in the Futurescape City Tours**", Selin and Gano argue that new engagement methods are needed to connect direct, public experiences of the sociotechnical systems wiring the city that embrace diverse ways of knowing and seeing while also cultivating a **critical imagination** about the future.
- Gubrium, A. and K. Harper (eds). *Engaging Participatory Visual and Digital Methods*. Left Coast Press).

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FCT/ Role of Photography in Civic Engagement

- Altamirano and Selin explore the role of photography during the FCTs in connection with interrogating urban imaginaries in "**Seeing the City: Photography as a Place of Work**"
- "Public Engagement for Environmental Sustainability in a Technological Age" in *Environmental Studies and Sciences*.

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Outreach

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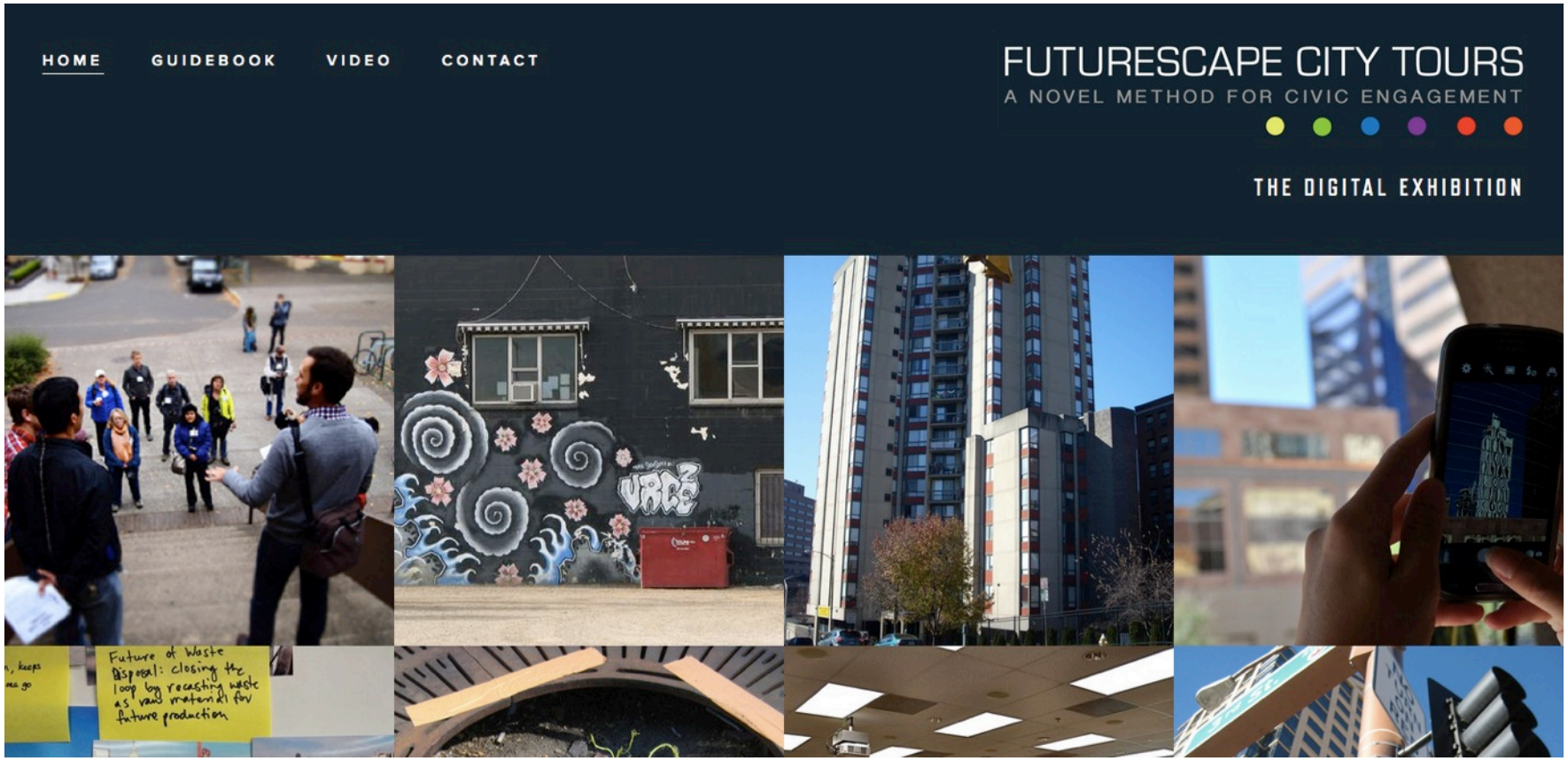
FCT Outreach Activities- Digital Exhibition



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FCT Outreach Activities- Guidebook for Practitioners

AN FCT CONSISTS OF THREE SESSIONS:

Orientation: Guided discussion uncovers the concerns and curiosities of participants related to the FCT topic and the future of their city or community.

Walking Tour: Based on those concerns and curiosities, participants go on a guided walking tour of their city or community. Along the way, they take photos representing the past, present, and future and also meet with subject experts and stakeholders.

Deliberation: Participants use their photos in a guided deliberation about the past, present, and future of their city or community as it relates to the FCT topic.

A camera is a tool for learning how to see without a camera. – Dorothea Lange

most vocal and articulate among us. Such approaches tend to stick to traditional learning spaces and relegate citizens to passive learner rather than equal contributor.

In an effort to create a more inclusive, sustainable, and integrated public engagement experience, researchers at the Center for Nanotechnology in Society at Arizona State University (CNS-ASU) developed Futurescape City Tours (FCTs). Combining a walking tour, photography, guided deliberation, behind-the-scenes expeditions, and informal conversations with city planners, policymakers, researchers, and civic leaders, FCTs attempt to embed citizens' values into local systems of innovation. Citizens drive the agenda and participate in conversations as active, experienced, and equal contributors.

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FCT Outreach Activities- Short Film

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On Tempering Futures

- *"to serve as a neutralizing or counterbalancing force to (something)"*
- Blank slate futuring: methods should anchor and stretch pre-existing ideas populating a highly trafficked future (not anything goes)
- Implicit futures: methods should make explicit rich views of time and change, often tacitly held (not always easily accessed)
- Linear notions of time: need to recognize entanglements and unequal distributions of past, present and future (not assuming 'progress')
- Laundry list of desirable futures: methods should explore trade-offs and value conflicts (not naïve rendering of endless possibilities)

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Today, there is a need for 'technologies of humility' to complement the predictive approaches: to make apparent the possibility of unforeseen consequences; to make explicit the normative that lurks within the technical; and to **acknowledge from the start the need for plural viewpoints and collective learning**.

Jasanoff 2003: 240

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